

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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EDITORIAL COMMENT.



CONTEMPORARY calls attention to the way in which the Army authorities attempt to fit square pegs into round holes, and instances the following cases :—

A bishop's son, himself an Oxford M.A., has been engaged in the Empire-saving occupation of picking grubs off cabbages. This was his only job. And the Education

Committee are crying out for teachers !

To carry a can of milk once a day from a farm a mile from camp is the occupation of an ex-engineer.

Round Pegs in Square Holes.

A munition worker, called up as A category, then classified C2, served out bread in a pantry at meal times.

By cleaning an officer's boots and belt and making his bed in the morning (half an hour's work) is how a journalist helps to win. And the Army says it needs clerks !

A partner in a shipping business spent his time usefully filling and lighting oil lamps in the huts at night.

And yet the war continues !

We quite agree that there are many abuses of the kind, which are on the face of things utterly absurd ; but, knowing something of how and why these

things happen, we really are not inclined to put *all* the blame on the shoulders of the military authorities. We know of a case, to which our special attention was directed, of a man, a highly skilled mathematician and conversant with the calculation of stresses and bending moments, whose services should have been of inestimable value in aeroplane construction, and who joined the R.N.A.S. He was duly posted to the Crystal Palace, and after his preliminary training was finished he was sent off to a station to be taught the process of making hydrogen. Naturally, he gathered the impression that the best use was not being made of his special qualifications, and in the course of conversation it was put to him whether he had taken the trouble to acquaint his Commanding Officer with those qualifications. His answer was that he had not, as he supposed his Commanding Officer had been informed of these ! What had apparently happened was that he had been treated as one of the ordinary type of enlistments, with no particular qualifications, and had been detailed for a job to which he would never have been sent if only he had taken the trouble to set forth that he possessed certain special knowledge which would make him useful in a particular direction.

We hold no brief for the military authorities, who sometimes do the most extraordinary things ; but we do put it that it is impossible for them, with all the best intentions in the world, to fit the round peg into its proper hole unless the peg itself will take the trouble to set out its own dimensions. Generally speaking, the officer commanding a unit or a station is only too desirous of doing all he can to make the best use of the material at his disposal, but it is perfectly obvious that he cannot succeed unless he knows what sort of material lies ready to his hand. It is quite impossible that he can know the attainments and capabilities of each man who comes under his command unless he is informed at first hand, and unless he is so informed it is inevitable that such examples as those quoted by our contemporary must occur. We are quite alive to the fact that it is not every Commanding Officer who will take the trouble to learn all about the officers and men under his command, but that type is, we think, in the minority, and, generally speaking, the naval and military officers in charge of drafting depôts are just as anxious as anybody to see that every man is fitted into the place that will suit his capabilities and attainments best, and thus help along the business of the war.

There are a great many things we have no desire to learn from the Germans. Unfortunately, we have been compelled in self-defence to copy and improve upon certain of their devices of war, the use of which we have aforesaid deemed outside the pale of civilisation and which we certainly would not have adopted had it not been that the enemy used them and thereby gained an advantage which had to be levelled up. As soon as the war is over we shall discard, we trust for all time, these devilish contrivances for the killing of men, and, as far as is possible, endeavour to forget that we ever knew them. On the other hand, there are things we can with real advantage learn, even from the enemy, and one of these is co-ordination of effort and of resources. One of the German military critics, writing on the subject of the respective air services of England and Germany, says:—

"The free play of forces, such as we encounter in the English organisation, may be a good thing in peace. In war, however, time must not be lost or labour wasted in conflicts between the various parts of an organisation, because on its smooth working the success of the whole depends. Therefore, the purely military system in the direction of our air service has proved more effective than the many-sided system under which the British flying service is conducted. England's air service is divided into complicated and overlapping departments. One has 'advisory' functions, another has to do with funds, another's business is to 'speed up,' and still another seems to have obstructive duties.

"In Germany there is but one all-determining will, exercising the indisputable functions of a superior over subordinates. The command 'Thou shalt' is promptly and unquestioningly translated into 'I will.' Therein lies the secret. Germany in time of stress has always found the men of commanding will which it required."

We are not particularly concerned with the writer's obviously high opinion of German methods and administration. He would be a poor enough German, as we know the breed, if he could find fault with the infallible military system of Prussia. But we are very deeply concerned with what he says about our own methods, the more so because we are fain to admit that he is somewhere near right about them. He has put his finger straight on to the weak spot, when he speaks of our "many-sided system." We ourselves, in the columns of "FLIGHT," have for years been hammering away at this weakness. Even before the war we had pleaded for higher co-ordination, and had pointed out that what must be aimed at is a single air service, self-contained as are the Navy and the Army. Ever since the outbreak of war we have kept on urging that this is the object at which the nation must aim, until at last it would seem that the mass of argument adduced by ourselves and others who have been equally insistent is producing its effect, for there seems now to be a real consensus of opinion in favour of the "One Air Service; One Uniform; One Badge" which we have so strenuously advocated.

It is true that the Government, whose business it is to translate this overwhelming mass of opinion into action, has not up to the present given any outward indication that it intends to move. It may be that it is waiting for a few more such candid criticisms from enemy sources as we have quoted. It is not easy to move the powers that be from within, but we have ever found them more susceptible to advice and criticism from without. It may be, therefore, that our friend the German critic has all unwittingly done us a real service, since it is reasonably certain that his opinions are likely to have

more weight in British official circles than any amount of newspaper argument from our own side.

Seriously speaking, however, it is wonderful how well we have done under the handicap of our system. Anything in the way of success that has been achieved has resulted in spite of, and certainly not because of, the system of which the German writer speaks. The overlapping of functions and the positive obstruction to progress that has resulted from the want of proper co-ordination has been enough to have killed most services, and yet we persist in tinkering here and patching there in the endeavour to make the beloved system work somehow, instead of taking the obvious course of scrapping the thing that is wrong and substituting for it the one that is better.

France has been the first of the Allied countries to realise that the single Air Service is the real solution of the problems which beset the question of maximum aerial efficiency in war, and has by decree constituted such a service, including both land and sea branches in a common organisation, under a single administrative head. We do not know at the moment the exact shape which the new French organisation is to take and whether it is to make of the Air Service an arm absolutely separate and distinct from both Navy and Army on the lines which have been advocated in these pages for our own Service. That is the ideal, but even if the French move should fall short of this, it is at least a long move in the right direction.

How the System Works.

As an example of what a handicap the "system" constitutes, we can scarcely do better than refer to a recent article in the *Evening Standard*—which, by the way, has manifested a great deal of useful interest in aviation recently—pointing the necessity for what it describes as a "Munitions Clearing House." After quoting one or two examples of the delay in completing machines owing to the working of the system, the article goes on to say that: "A man having business with the Air Board leaves his office in the morning with a conviction that he will not return to it that day. He has visions, fostered by experience, of being referred from one department to another until he has told his story and sought his information in half-a-dozen quarters. He feels that he is an unwilling victim to inefficiency, having wasted his own time and that of others."

Unfortunately, that is a perfectly true and faithful picture—at the end of three years of a great war. There is no question but that the Government has brought overlapping up to the standard of a fine art, with the necessary corollary that production is retarded and the all-round efficiency of the Flying Services suffers terribly. The system is responsible for such overlapping as we drew attention to last week, in which there is no attempt made to co-ordinate work so as to take the fullest advantage of capacity for production. It is not the slightest use endeavouring to carry out a policy of patching up. Nothing will come anywhere near to securing the full results from our enormous resources but the placing of aerial policy under a single control and getting rid, once and for all, of the present appallingly wasteful system of overlapping and divided responsibility.

The fault does not lie so much at the door of the people who are working the system. They are just



A CANADIAN V.C.—Captain W. A. Bishop, D.S.O., M.C., Canadian Cavalry and R.F.C., was last week awarded the V.C. for most conspicuous bravery, determination and skill. Captain Bishop, who had been sent out to work independently, flew first of all to an enemy aerodrome; finding no machine about, he flew on to another aerodrome about three miles south-east, which was at least twelve miles the other side of the line. Seven machines, some with their engines running, were on the ground. He attacked these from about 50 feet, and a mechanic, who was starting one of the engines, was seen to fall. One of the machines got off

(Continued on p. 854.)

as much victims of a wrong conception of our needs as the contractor and the business man whose time is wasted and whose work for the country is retarded by its obstructiveness. It is quite necessary to get this fact into our minds, because otherwise we get a totally wrong perspective and are apt to conclude that what is wanted is reorganisation and not reconstruction. The real fact of the position is that the division starts at the top and becomes more accentuated as we get lower down the administrative scale. In the beginning we have the two fighting Services competing against each other for their respective requirements, and so long as they exist as separate entities so long must they remain competitors in spite of all that can be done to co-ordinate their interests and eliminate competition. The Air Board has done its best to remove the points of difference and to co-ordinate the needs of both Services, but it is working under the handicap of a system—or rather a state of things—which starts by being wrong, since it does not finally remove the element of competition. However much and with whatever goodwill the Board may try to reconcile and adjust things, there remains the basic objection that there are still *two* Services and not the ideal *one*. To think that their interests can be reconciled, with the Ministry of Munitions in between to act as a sort of arbitration court to settle matters of supply, is entirely a fallacy. It cannot be done and full efficiency obtained at the same time. The only way is to bring those interests to a common dimension and place them under a single head. Everyone who has given the subject intelligent study is agreed upon that. Not a single argument, valid or otherwise, has been adduced against the ideal of a single Air Service and the wiping out of the present extravagant system, and yet we do not seem to get much nearer to its consummation.

An Object Lesson for the Pacifists.

It is becoming evident that there is a vociferous minority which is at least tentatively, if not definitely, in favour of making peace "by agreement." We need not trouble to traverse the arguments that are put forward in favour of such a course, since they are such as no right-thinking Briton would allow to sway his opinions. They are better not discussed, and it is sufficient to admit that there is such a minority, which, so far as it is possible to discern, is made up of people with "cold feet" and of covert friends of the enemy. Nor need we trouble ourselves with the objects which these people have in view—they are, in both cases, sufficiently clear to be read as we run.

These pacifists, under whichever head they fall, will do well to mark and ponder the attitude of the seamen towards "peace by arrangement," bearing in mind that our sailors know more than most at first hand of the kind of enemy the peace-mongering minority would take to its bosom. According to official figures, no fewer than six thousand of our seamen have been sent to their deaths by the savagery

of the Hun while using the seas upon their lawful occasions. That, we submit, gives our seafarers a prescriptive right to the expression of certain very definite opinions upon the only possible kind of peace we can make and to have some sort of say on the question of the treatment of the Hun after the kind of peace we intend to have has been consummated.

Their idea of the state of things to be brought into being when the war is over certainly commends itself to us, and will, we imagine, appeal also to everyone who has followed the vile doings of the Hun pirates on the high seas. Briefly, the seamen demand that no German ship should be allowed to leave port for two years after the war, and that the seamen's unions should refuse to allow any German to serve in British, Allied or neutral ships. Further, they demand that the persons responsible for the sinking of merchantmen shall be tried for murder. All of which must be conceded to be just and reasonable, if it is practicable. We are inclined to think, however, that the demand that no German ship should be allowed to leave port for two years after the war scarcely falls within the category of things that *are* practicable. What it means is that the Allies would have to establish a strict blockade of the whole German coast, which is a trying and an expensive operation to maintain. Moreover, the objects which the sailors have in mind could be equally well achieved in a much easier way. Let all Allied ports and coaling stations, wherever situate, be closed to the German and Austrian flags—war and mercantile—for a long term of years. We certainly would not stop at two—ten would be preferable, though, as we feel now, we should be inclined to make the ban permanent and constitute the Hun a perpetual outlaw of the seas. To make the outlawry effective we should have to take stringent precautions against the transfer of German shipping to neutral flags, or we should find our ports congested by German shipping masquerading under all sorts of Scandinavian colours. Therefore, it would be necessary, if the ban is to be properly carried out, to forbid any German of whatsoever rank or status to enter Allied countries or dominions for a term of years. That is what we should like to see done, but we frankly have little hope of it. The influences in favour of the unspeakable Hun are too strong, even now, to be easily overthrown. When Germans still sit at the board of the King's Privy Council, and when all sorts of Hun businesses are going as strong as ever they were, and when there are still some thirty thousand alien enemies running loose about the country, one may well despair of the wreckers of Belgium and France being given their just deserts when at last we are in a position to award punishment. The seamen, however, have made a strong move in the right direction. They have put down their ideas of a peace basis in black and white. Let other sections of the people speak their minds as distinctly and there will at once be recorded such an overwhelming volume of opinion as even the "Unseen Hand" cannot ignore.

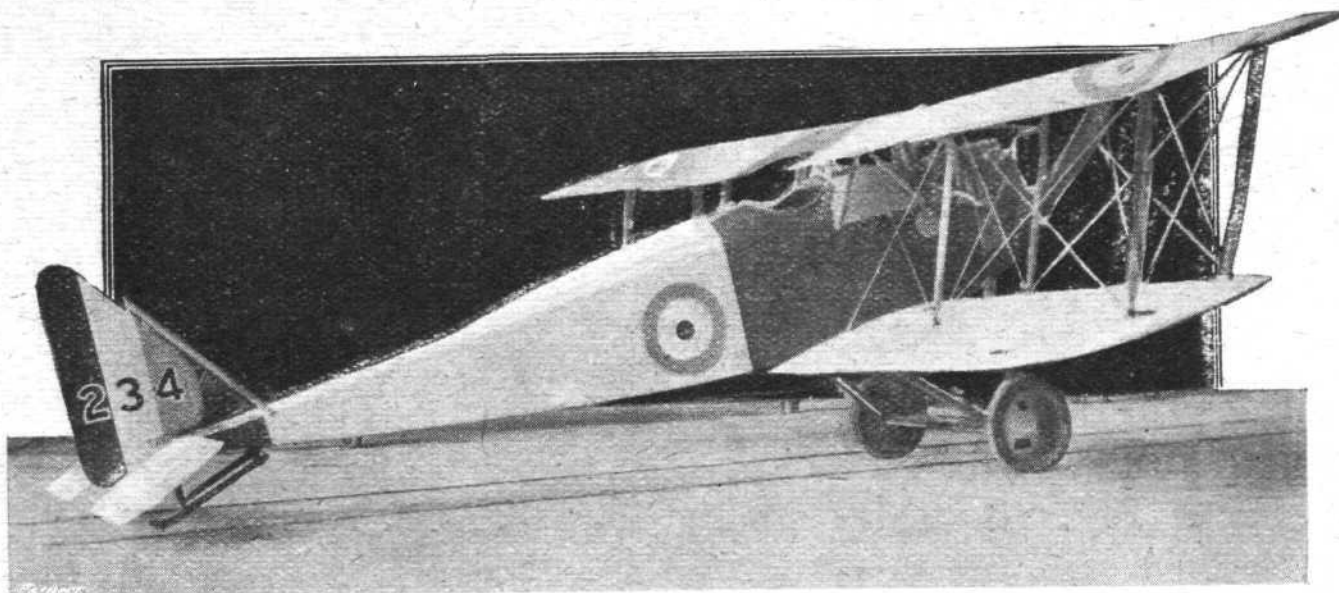
(Inscription continued from p. 853.)

the ground, but at a height of 60 feet Captain Bishop fired 15 rounds into it at very close range, and it crashed to the ground. A second machine got off the ground, into which he fired 30 rounds at 150 yards' range, and it fell into a tree. Two more machines then rose from the aerodrome. One of these he engaged at a height of 1,000 feet, emptying the rest of his drum of ammunition. This machine crashed 300 yards from the aerodrome, after which Captain Bishop emptied a whole drum into the fourth hostile machine and then flew back to his station. Four hostile scouts were about 1,000 feet above him for about a mile of his return journey, but they would not attack. His machine was very badly shot about by machine-gun fire from the ground.

THE 1916 TYPE HALBERSTADT BIPLANE.

IN our issue of April 5th, 1917, we gave a description and a number of detail sketches of the construction of the German Halberstadt biplane. These, as well as the drawing showing the machine in flight, were prepared from a very incomplete set of parts, most of which were in a hopeless condition, while the whole nose of the machine and large portions of the wings were missing altogether. Nevertheless, by comparing these sketches with an actual complete machine since captured, it was found that all the particulars then given were absolutely correct. That this is so may be easily verified by referring back to our April 5th issue and comparing the drawing of the machine in the air with the photographs of a

our Allies' modern fighters. The machine which has, more than any other, superseded the Halberstadt is the Albatros single-seater with the Nieuport-type wing bracing, illustrated and described in "FLIGHT" of July 12th. It might be objected that the machine of which we publish photographs this week is of a type that is nearly a year old. This we grant, but to the best of our knowledge there is not in existence—or at any rate not in use—a modern Halberstadt. Whether the reason for this is to be sought in so vastly superior a performance by the other makes of German fighters as to cause the German authorities to concentrate on the production of these, or whether it is due to the Halber-

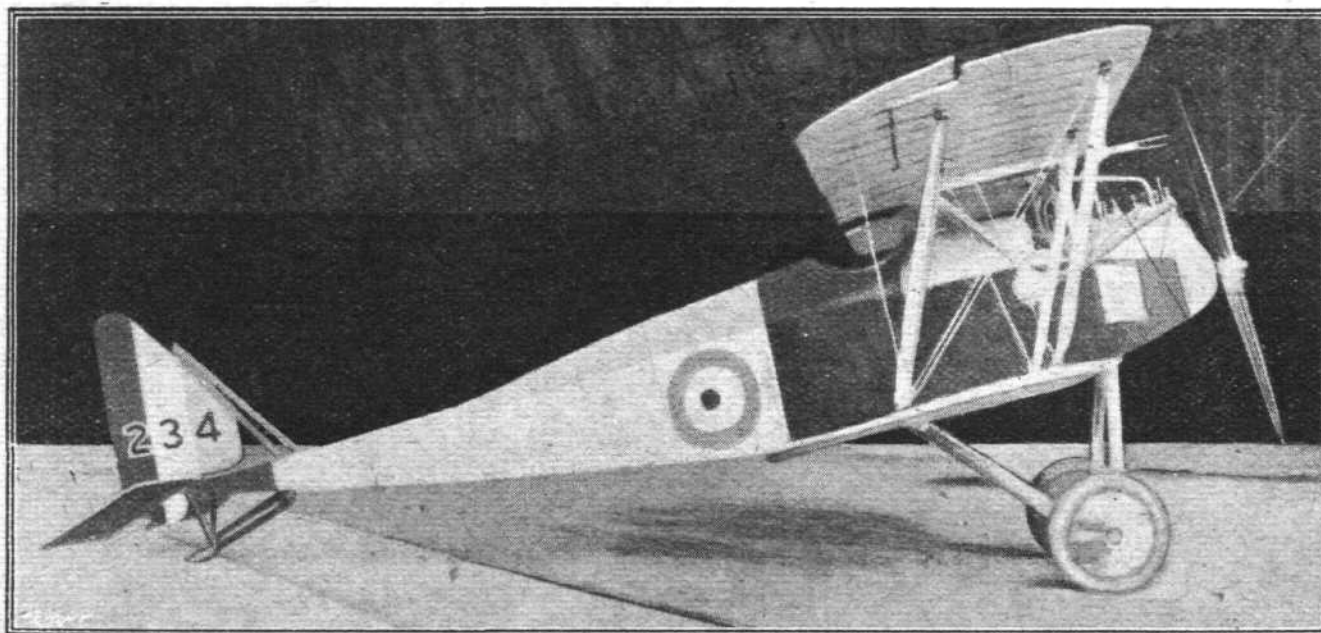


Three-quarter rear view of the Halberstadt biplane.

captured machine which, thanks to the courtesy of the military authorities, our representative was able to inspect at a home aerodrome a few days ago. The machine has, it may be noticed, been painted with the British identification marks for purposes of testing it over English soil and thus find out if there is anything particularly valuable in its performance which might be of any use to our constructors. Let it be said at once that there does not appear to be any phase of performance or evolution in which this once-upon-a-

stadt in its present form being difficult to alter and improve to such an extent as to bring its performance up to that of the others, is a matter for conjecture. We have heard it said that while the Halberstadts were in use on the Western Front a surprisingly large percentage of those brought down were observed to come to earth in what appeared to our pilots to be a spinning nose-dive.

If this be so—and we have heard the same remark made by so many independent observers that there can scarcely

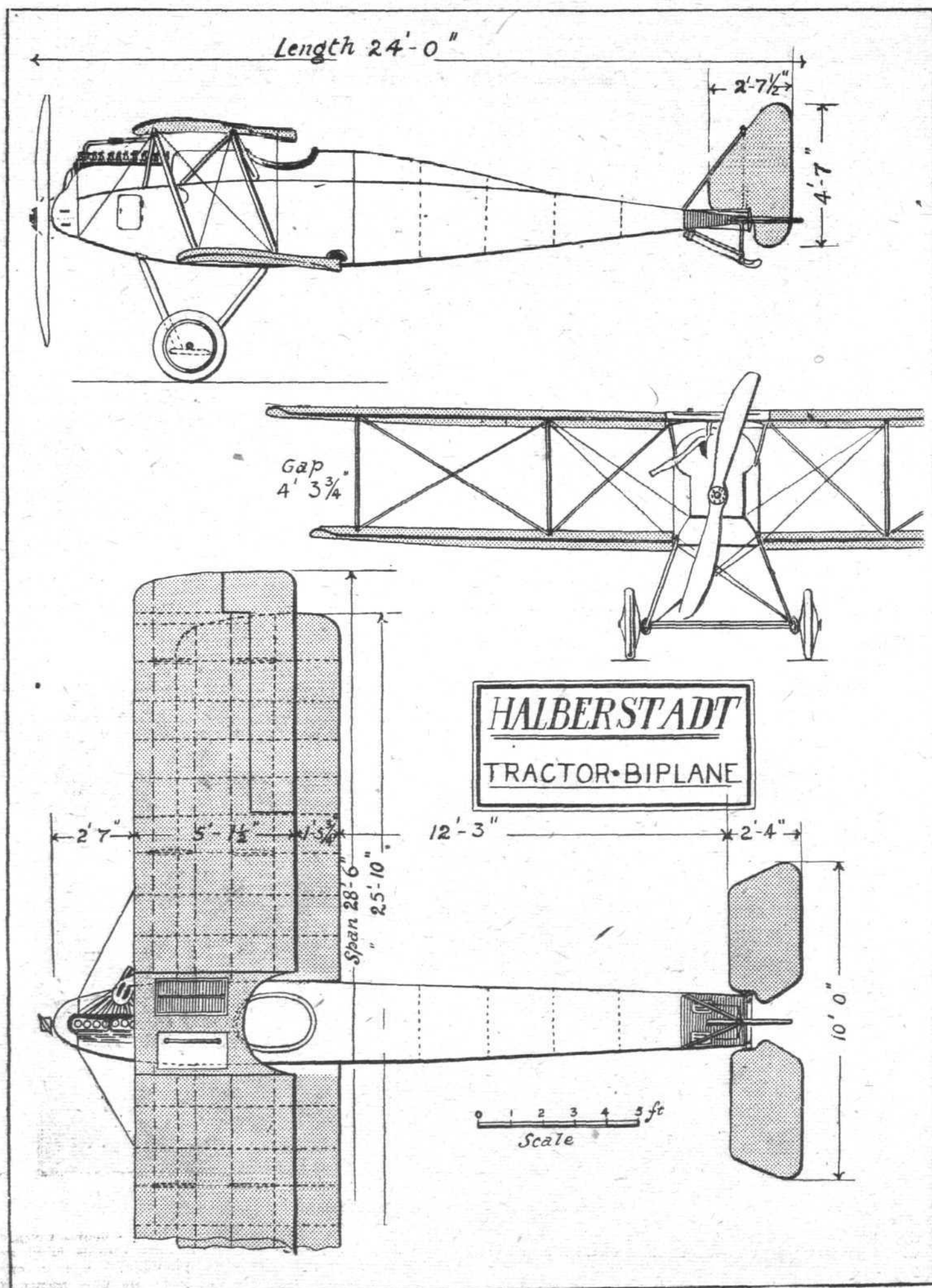


Side view of the Halberstadt biplane.

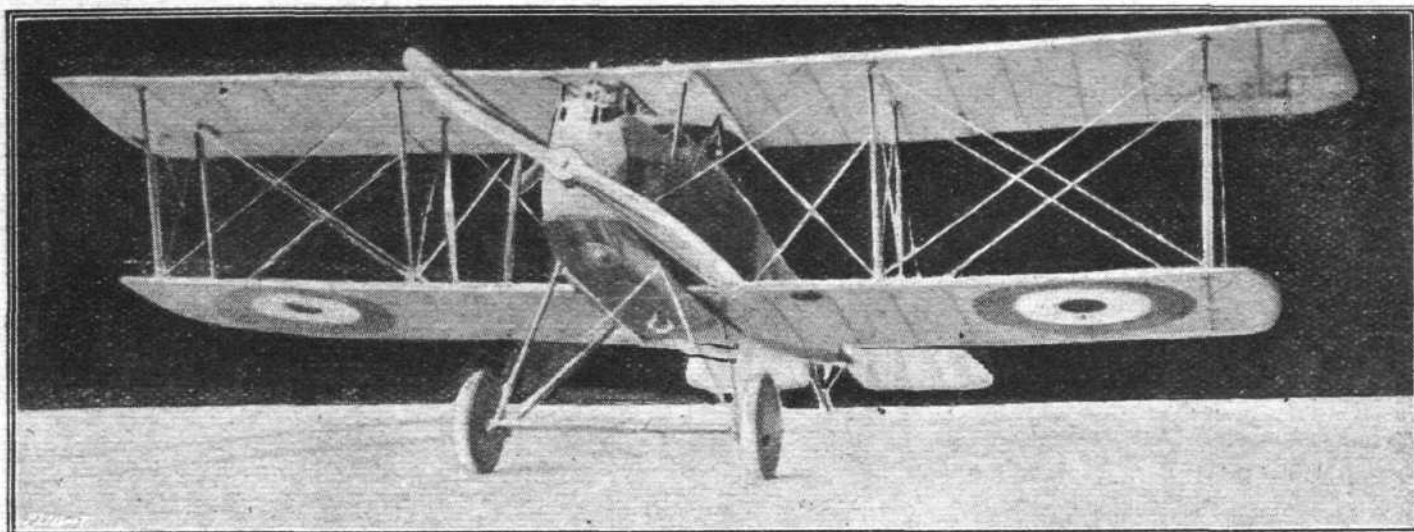
time much-talked-of machine can hold its own compared with a good British or French machine of the same size and power.

So far as it is possible to gather, the Halberstadt has almost, if not quite, disappeared from the Western Front, which fact indicates that it is no longer a match for our

be any doubt about the correctness of the statement—it rather looks as if the Halberstadt was inclined towards spiral instability. An examination of the photographs tends to confirm this impression. In the first place, the total absence of any fixed vertical surface in front of the rudder, coupled with the fact that the body terminates in a horizontal knife-edge



THE HALBERSTADT BIPLANE.—Plan, side and front elevations.



A CAPTURED HALBERSTADT BIPLANE.—Three-quarter front view.

at the rear, at once makes one suspicious as to the adequacy of vertical surface to the rear of the centre of gravity. To make matters worse the body is very deep in front, the vertical surface here being also slightly augmented by a portion of the large water-cooled engine, although in the present machine this is, as a matter of fact, almost totally covered in.

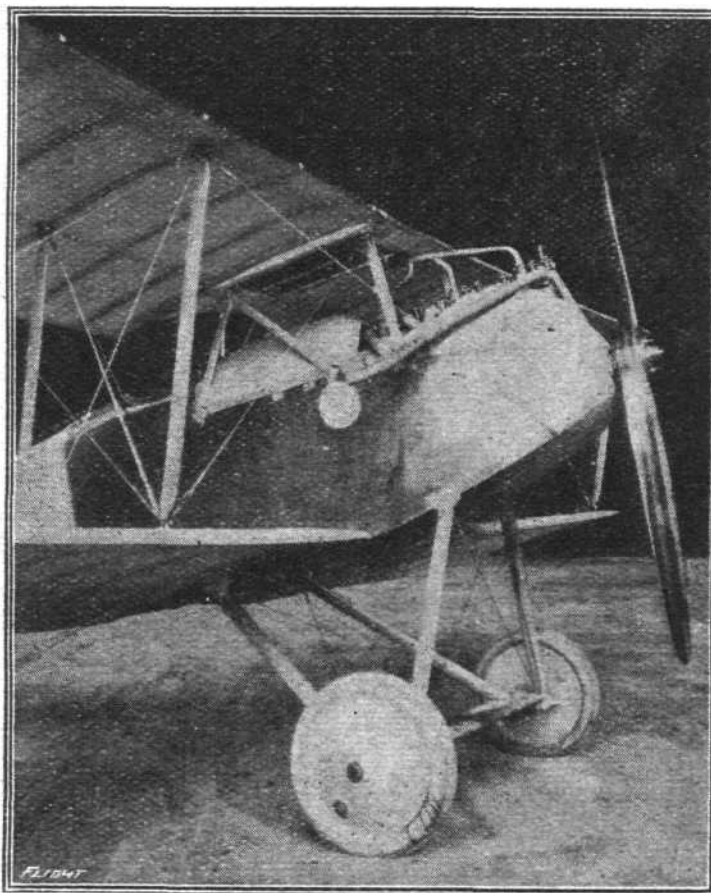
As to the possible reasons why the performance should be inferior to that of other machines of similar horse-power: The body does not impress one as being of particularly good form for low resistance. This is probably chiefly due to the peculiar way in which the turtle back deck is finished off abruptly at a point approximately half-way between the pilot and the tail. The break in the curve of the top covering is very pronounced at this point, and where high speeds are concerned little things like this soon begin to add up and increase the resistance.

In regard to the wings, the first impression one receives is that the strutting and wiring is somewhat clumsy, two pairs of interplane struts on each side being scarcely deemed necessary—at any rate, by British and French designers—in a machine of only some 28 ft. span. Again, the wing section gave our representative, from a superficial inspection it is true, the impression of being very deeply cambered for a fast machine, although, without knowing the exact shape of the section and being able to compare it with known sections, it is not possible to pass judgment on this point. It does not, as well-known wing sections have shown, follow that a deeply cambered section may not have a very excellent L/D ratio as well as a good lift coefficient.

As the Halberstadt has already been described and illustrated with regard to its constructional details, there does not appear to be any reason for elaborating these here. Since, however, the front part of the machine previously described was missing, a few words concerning this part may be of interest. The engine, a 120 h.p. Argus, is, as will be seen from the illustrations, almost totally hidden inside the body, only the top of the cylinders with their valve stems and springs projecting. The exhaust pipes are of a curious formation, looking somewhat like the weirdly shaped freak carrots sometimes deemed worthy of an illustration in the Press. As to the purpose of this writhing mass of tubes, this is not instantly apparent to the uninitiated, one pipe from each cylinder joining one from another, the resultant pipe joining further along its course up with similar ones, the whole to finish in a single outlet to the air.

The only other feature of the Halberstadt biplane that is of any particular interest is the radiator, which is, as will be seen, mounted in the centre section of the top plane, to the

curvature of which it conforms. Certainly this arrangement should make for reduced head resistance, and it may be taken for granted that it has been found in practice to give adequate



Chassis and engine housing of the Halberstadt biplane.

cooling. That its position is such that, should it be pierced by a bullet, the hot water can hardly fail to give the pilot a liberal sprinkling, may be disconcerting to the pilot, but it is interesting from an aerodynamical point of view.

Aero Engine Parts Urgently Wanted. A Chance for Engineering Shops.

IN view of the urgent demand for increased aero engine or aero engine parts production, as supported by the maximum priority given to this class of work, it is of the greatest national importance that any firms who consider they are in a position to render assistance should write to the Controller

of Aeronautical Supplies, Room 355, Air Board Office, Strand, W.C.2.

One Air Service in France.

A DECREE officially published in Paris on August 18th announced the fusion of the military and naval air services, which will be placed under the single direction of one Under-Secretary of State. It is also emphasised that the air service will act in close co-operation with the air services of the Allies.

HONOURS.

Honours for the R.F.C.

In the long list of honours announced in the *London Gazette* on August 16th, the following appear:—

The King has been pleased to approve of the appointment of the following officer to be Companion of the Distinguished Service Order in recognition of his gallantry and devotion to duty in the field:—

Capt. R. WILLIAMS, Flying Corps.—Flying at a low altitude under intense anti-aircraft fire, he attacked and dispersed enemy troops who were concentrating on our flank. On another occasion, whilst on a reconnaissance, he landed in the enemy's lines and rescued a pilot of a machine which had been brought down by hostile fire.

The King has been pleased to award a Bar to the Military Cross to the following officers:—

Temp. Lt. W. A. BOND, M.C., Yorks. L.I. and R.F.C.—While on patrol he attacked at close range a hostile machine, which was sent out of control. Shortly afterwards he attacked another, which stalled and fell sideways. On another date he flew over the lines at about 50 ft. and attacked a hostile balloon, bringing it down in flames. (M.C. gazetted June 24th, 1916.)

2nd Lt. W. C. CAMPBELL, M.C., R.F.C., S.R.—He has repeatedly shown great fearlessness and skill in attacking and destroying enemy aircraft, on one occasion destroying three within one hour. He has also attacked and dispersed enemy troops from a low altitude, at all times showing the utmost disregard of personal safety. (M.C. gazetted in this *Gazette*.)

Lt. (Temp. Capt.) W. J. C. KENNEDY-COCHRAN-PATRICK, M.C., Rif. Bde. and R.F.C.—For conspicuous gallantry in attacking hostile aircraft. Within two months he brought down two hostile machines in flames, and four others completely out of control. In addition, he has driven several others down in a damaged condition. (M.C. gazetted May 16th, 1916.)

The King has been pleased to confer the Military Cross on the following officers in recognition of their gallantry and devotion to duty in the field:—

2nd Lt. W. C. CAMPBELL, R.F.C., S.R.—He attacked an enemy balloon, bringing it down in flames, and returned to our lines at about 20 ft. from the ground under heavy fire. On another occasion he attacked and dispersed a column of infantry from a very low altitude. He has shown great courage and initiative throughout.

2nd Lt. A. T. COLE, Australian Flying Corps.—With another officer he attacked and disorganised six enemy machines that were about to attack our cavalry with bombs. The engagement was continued until all six machines were forced to return to their lines. His skill and courage on all occasions have been worthy of the highest praise.

Temp. 2nd Lt. R. M. DRUMMOND, R.F.C., attd. Austr. C.—With another officer he attacked and disorganised six enemy machines that were about to attack our cavalry with bombs. The engagement was continued until all six machines were forced to return to their lines. His skill and courage on all occasions has been worthy of the greatest praise.

Temp. Lt. D. C. EGLINGTON, R. Highrs. and R.F.C.—For conspicuous gallantry and devotion when acting as an observer. In the course of a fight with several Albatros scouts, in which he shot down one, the pilot was wounded and fell over the control lever insensible, causing the machine to dive with the engine full on. He climbed out, standing outside the fuselage on the lower plane, dragged the pilot back, and, switching off the engine, pulled the machine out of its dive. Not being a trained pilot, his act exhibited great fearlessness and skill.

Temp. 2nd Lt. (Temp. Lt.) W. M. FRY, Gen. List and R.F.C.—Diving to a very low altitude, and under heavy fire, he emptied all his ammunition into the retreating enemy. During the last month he has brought down four hostile machines. He has done consistent good work as a pilot.

Temp. 2nd Lt. C. C. G. GIRVAN, Lanc. Fus. and R.F.C.—When on patrol he flew for 2½ hours at a height of 500 ft., gaining and dropping valuable information at Headquarters. Although severely wounded and fainting from loss of blood, he handed in his report before finally collapsing.

Temp. Lt. L. F. JENKIN, Gen. List and R.F.C.—Whilst on offensive patrol he has continually shown the greatest dash and determination in attacking enemy aircraft in superior numbers, destroying some and bringing others down out of control.

Temp. Capt. A. W. KEEN, Gen. List and R.F.C.—He has shown the greatest gallantry in aerial fighting, and his daring

in leading offensive patrols into favourable positions for attack has been the means of many hostile aircraft being destroyed and driven down.

2nd Lt. (Temp. Capt.) J. H. T. LETTS, Linc. R. and R.F.C.—He attacked four large two-seaters, driving two down out of control and forcing the remaining two down. He has helped to destroy eight machines, and throughout has set a splendid example.

Temp. 2nd Lt. G. F. LINES, Gen. List and R.F.C.—He rendered valuable assistance to our artillery by locating a hostile battery, descending to a very low altitude. On his return he attacked hostile infantry, inflicting many casualties. On many other occasions he has displayed similar fearlessness in attacking and bombing hostile wiring parties, infantry and ammunition dumps.

2nd Lt. E. A. MCKAY, R.F.C., S.R.—For conspicuous gallantry and devotion to duty in making valuable photographic reconnaissances under heavy hostile fire. His work whilst engaged on reconnaissance and patrolling has at all times shown a fine offensive spirit, notably in flying at low altitudes and engaging hostile troops with his machine gun.

2nd Lt. A. S. SHEPHERD, R.F.C., S.R.—While on balloon attack he came under heavy fire from a rocket battery. He attacked this battery from a low altitude, silencing it, and dispersing the gunners. He then returned to the attack on a balloon, and fired all his ammunition, and though his machine was badly hit, crossed the line at 100 ft.

2nd Lt. (Temp. Capt.) W. R. S. WILBERFORCE, K.R.R.C., attd. R.F.C.—During a bomb attack on our lines by hostile aircraft he attacked them single-handed, although they were superior to him in speed, and after a running fight destroyed an enemy machine. His skill and courage throughout nine months' operations have been worthy of the highest praise.

2nd Lt. A. M. WRAY, E. Kent R. and R.F.C.—While on an offensive patrol he attacked a hostile two-seater at close range. He was at once severely wounded, and though his thigh was fractured and his machine fell several thousand feet, out of control, he managed to obtain control again and effected a safe landing. He has previously done splendid work.

The King has been pleased to approve of the award of the Distinguished Conduct Medal to the following for acts of gallantry and devotion to duty in the field:—

22025 Sergt. R. O. CAMPBELL, R.F.C.

54267 Sergt. C. R. L. FALCY, R.F.C.

53352 2nd Air-Mech. J. H. HOLDERSHAW, R.F.C., attd. R.F.C.

The King has been pleased to award the Military Medal for bravery in the field to the following:—

13990 1st Air-Mech. C. F. NESBITT, R.F.C.

65519 2nd Air-Mech. W. H. POOLE, R.F.C.

8853 2nd Air-Mech. L. SPICER, R.F.C.

The King has been pleased to award the Meritorious Service Medal to the follow in recognition of valuable services rendered with the armies in the field during the present war:—

5046 Sergt. E. C. CHAPMAN, R.F.C.

1676 Flight-Sergt. W. A. H. COATES, R.F.C.

213 Temp. Sergt.-Major C. J. DAVIES, R.F.C.

77481 Sergt. H. DEACON, R.F.C.

120 Actg. Sergt.-Major W. SHARP, R.F.C.

1651 Flight-Sergt. A. VAILE, R.F.C.

"Mentioned in Despatches."

It was announced in the *London Gazette* on August 15th that the Secretary of State for War has received the following list of names of officers, warrant and non-commissioned officers and men, whose services have been brought to notice by Lieut.-Gen. Sir Stanley Maude, K.C.B., Commander-in-Chief, Mesopotamian Expeditionary Force, as deserving of special mention:—

Royal Naval Air Service.

Flight-Lt. A. W. CASSY, Flight Sub-Lt. M. LYON, Lt. D. R. VEREY (R.N.V.R.), Comdr. F. R. WROTTESEY, R.N.

F. 7736 Air-Mech. (1st Gr.) T. BRENNAN, Ply. 13554 C.P.O. (2nd Gr.) A. E. COWTON, F. 8912 Ldg. Mech. C. L. CRACKNELL, F. 4667 Ldg. Mech. R. C. FREEMAN, F. 9262 P.O. Mech. A. H. VEALE, F. 9274 Ldg. Mech. P. H. WARD, F. 9291 Air-Mech. (1st Gr.) E. W. YOUNG.

Staff and Headquarters.

Major N. D. K. MAC EWEN, A. and S. Hrs. and R.F.C.

Royal Flying Corps.

Lt. (Temp. Capt.) L. J. BAYLY, R.A.; Capt. (Temp. Major in Army) H. DE HAVILLAND, D.S.O., R.F.C., S.R.; 2nd Lt. (Temp. Lt.) W. A. FORSYTH, R.A.; Lt. T. McD. HAWKER,

R. Ir. Fus.; Lt. (Temp. Major in Army) J. H. HERRING, D.S.O., M.C., R.F.C., S.R.; 2nd Lt. R. M. C. MACFARLANE, R.A.; Lt. (Temp. Capt. in Army) G. MERTON, M.C., R.F.C., S.R.; Temp. Lt. E. R. MOXEY; Temp. Lt. A. R. RATTRAY; Bt. Major (Temp. Lt.-Col.) J. E. TENNANT, M.C., S. Gds.; Temp. Lt. (Temp. Capt.) W. W. TULLIS, Gen. List.

No. 11687 Pte. (local Sergt.) S. B. AYLING, Wilts. R. (now No. 78866, R.F.C.); No. 1676 Flight-Sergt. W. A. H. COATES, No. 77481 Corpl. H. DEACON, No. 3983 Sergt. P. W. EVANS, No. 14170 Corpl. G. GARDNER, No. 5551 1st Air-Mech. F. KEIL, No. 1651 Flight-Sergt. A. VAILE, No. 4161 Sergt. F. WALTON.



THE ROLL OF HONOUR.

REPORTED by the Admiralty:—

Accidentally Killed.

Flight-Lieut. C. V. Arnold, R.N.
Prob. Flight Officer R. E. Bray, R.N.
Prob. Flight Officer L. E. Forman, R.N.

Previously Missing, now reported Killed.

Flight-Lieut. C. R. Blagrove, R.N.
Flight Sub-Lieut. E. D. Roach, R.N.
Flight Sub-Lieut. H. L. Smith, R.N.

Wounded.

Flight Sub-Lieut. R. F. P. Abbott, R.N.
Flight Sub-Lieut. C. G. Brock, R.N.
Flight Sub-Lieut. A. H. Garland, R.N.

Slightly Wounded.

Flight Sub-Lieut. S. Burton, R.N.
Flight-Lieut. H. J. T. Saint, R.N.

Injured.

Flight Sub-Lieut. F. W. Dolman, R.N.

Slightly Injured.

Prob. Flight Officer B. R. Carter, R.N.
Flight Sub-Lieut. G. H. G. Smyth, R.N.

Missing.

Flight Sub-Lieut. M. N. Baron, R.N.
Flight Sub-Lieut. A. T. Gray, R.N.
Flight Sub-Lieut. S. H. Lloyd, R.N.
Flight Sub-Lieut. F. S. Strathy, R.N.

Previously reported Missing, now reported Prisoner.

Flight Sub-Lieut. A. B. Holcroft.
Flight Sub-Lieut. R. L. Kent, R.N.

Previously Missing, believed Prisoner, now reported Prisoner of War.

Flight Sub-Lieut. G. E. Nash, R.N.

Reported by the War Office:—

Killed.

Capt. S. Le G. Cutler, A.S.C., attd. R.F.C.
2nd Lieut. S. McMurray, London and R.F.C.
2nd Lieut. D. E. Marshall, W. Yorks, attd. R.F.C.
2nd Lieut. H. M. S. Pillow, Middlesex, attd. R.F.C.
2nd Lieut. A. Walsh, E. Lancs. and R.F.C.
13840 1st Air-Mech. T. Evans, R.F.C.
11369 2nd Air-Mech. W. M. Lloyd.

Accidentally Killed.

Lieut. E. G. Hanlan, Cent. Ont., attd. R.F.C.

Died.

36339 Pte. A. Carter, R.F.C.
5566 Corpl. L. A. R. Shonfield, R.F.C.
47330 Pte. G. Tree, R.F.C.



One Air Service.

In the debate on the motion for the adjournment in the House of Commons on August 17th, Mr. Hogge complained that nothing had been said about the Air Service, which he thought ought to have been touched upon. They were, he said, in the thick of another advance on the Western front, and would be in the thick of air raids in this country during the recess. They did not know yet whether any attempt was going to be made to amalgamate the two Air Services, or to control those Services. There were a great many questions that could be put with regard to both of the Services, as to the provision of machines which were being used now on the Western front, being sent over the line on the Western front every day of the fighting. There were a great number of facts on which they were given no details with regard to the Air Service. He did not know whether the Under-Secretary for War could deal with some of these points, but there was one point he would like some information on. Why had the German aeroplane so much and such continuous

Previously Missing, now reported Killed.

2nd Lieut. T. Webb, R.F.C.

Died of Wounds.

2nd Lieut. H. J. Day, Glouc., attd. R.F.C.
2nd Lieut. T. F. P. J. Dennett, R.W. Surrey and R.F.C.
2nd Lieut. I. G. Gibson, W. Yorks., attd. R.F.C.
2nd Lieut. D. J. Fendall, R.F.A., attd. R.F.C.
12805 1st Air-Mech. J. Sowerby, R.F.C.

Wounded.

2nd Lieut. F. Adams, R. Fus., attd. R.F.C.
2nd Lieut. A. A. Bathurst, D. of Well., attd. R.F.C.
Lieut. G. Budden, R.E., attd. R.F.C.
Capt. F. H. Coleman, R.F.C.
2nd Lieut. E. V. Gibson, R.F.C.
2nd Lieut. W. P. Hawgood, R.F.C.
2nd Lieut. A. Jerrard, S. Staffs. and R.F.C.
Capt. J. Kirschberg, N.Z. A.S.C., attd. R.F.C.
2nd Lieut. I. C. MacGregor, R.F.C.
2nd Lieut. J. W. Mullen, R.F.C.
2nd Lieut. A. E. Peel, R.F.C.
2nd Lieut. A. R. Penny, R.F.C.
2nd Lieut. W. M. Pierce, Middlx., attd. R.F.C.
Capt. J. A. Revill, Can. Inf., attd. R.F.C.
2nd Lieut. G. Ross-Soden, R.F.C.
Lieut. L. F. C. St. Clair, Lancs., attd. R.F.C.
Lieut. S. H. Short, Can. F.A., attd. R.F.C.
2nd Lieut. C. E. Wharram, S. Staffs., attd. R.F.C.
2nd Lieut. T. M. Willett, R.F.C.

Previously Prisoners of War, now reported Wounded and Prisoners of War in German hands.

2nd Lieut. F. J. Kirkham, R.F.A., attached R.F.C.
2nd Lieut. G. A. Newenham, R.F.C.

Missing.

Lieut. C. A. S. Bean, Brit. Col., attd. R.F.C.
Capt. E. H. Bedson, Lanc. F. and R.F.C.
2nd Lieut. H. B. Billings, R.F.C.
2nd Lieut. H. J. Ellam, R.F.C.
2nd Lieut. E. P. Fulton, R.F.C.
Lieut. W. H. Howes, R.F.C.
2nd Lieut. G. Leal, R.F.A., attd. R.F.C.
2nd Lieut. W. R. K. Skinner, R.F.C.
2nd Lieut. A. Wearne, Austr. F.C.

Previously Missing, now reported Prisoner of War in German hands.

Lieut. W. T. Coles, Ox. and Bucks. L.I., attd. R.F.C.

Previously Missing, now reported Prisoner in Bulgarian hands.

Lieut. A. Leslie-Moore, Ind. Army Res. of Off., attd. R.F.C.

success in destroying our observation balloons on the Western front? They were behind the lines on the Western front, and they were supposed to be protected by the British Air Service, but if the German had more success in any one thing than another it was his success in bringing down our observation balloons on the Western front. You could talk to the men returning from the front almost every day of the week, and they would tell you of the numbers of men they had seen in the air at one time descending from these observation balloons by means of parachutes.

The Raid on Frankfurt.

An official telegram, published in Berlin on August 14th, says: "Yesterday evening, at 8 o'clock, a hostile aeroplane dropped five bombs on Frankfurt-on-Maine. Two men, one woman and one child were killed, and 12 other persons were wounded. No damage of a military character was done. While returning the raider was brought down near Saarge-muend by two of our aeroplanes, and the (French) occupants were made prisoners."

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Club House.

The following prices have been fixed for the present by the Committee:—

Bedroom (including Bath)	5s. each per night.
Breakfast	2s. 6d.
House Luncheon	2s. 6d.
House Dinner	3s. 6d.

Billiard Room.

The Billiard Room is now open for the use of the Members.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

The Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal

Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 3, Clifford Street, New Bond Street, London, W. 1.

Subscriptions.

	£	s.	d.
Total subscriptions received to Aug. 14th, 1917	11,882	19	10
2nd Lieut. L. Francis Jones, R.F.C.		1	10

Total, August 21st, 1917 11,884 0 10

H. E. PERRIN, Secretary.

3, Clifford Street, New Bond Street, W. 1.

Answers to Correspondents.

[As a number of letters reach us signed with initials only, some of which do not give a complete address, we would point out that such communications cannot be dealt with in our columns. Full name and address, which will not be published, must always be given.—Ed.]

Notice to Correspondents in General.

Applications for commissions in the Royal Naval Air Service should be addressed to the Director of Air Services, Admiralty, S.W. The necessary form and conditions of entry can be obtained from the Secretary of the Admiralty.

Applications for commissions in the Royal Flying Corps should be sent to the Director-General of Military Aeronautics, Hotel Cecil, Strand, W.C.

Those who wish to enlist in the R.N.A.S. should apply to the nearest naval recruiting station or to the R.N.A.S. Drafting Office, Crystal Palace, S.E. Skilled mechanics are taken whatever their army classification, but unskilled men are only taken if they are classified B1, B2, or C1.

Recruiting for the R.F.C. is closed for the time being, and any enquiries should be made to the Officer Commanding, Royal Flying Corps Depot, Farnborough.

Enquiries with regard to appointments in the A.I.D. should be addressed to the Chief Inspector, Aeronautical Inspection Department, Hotel Cecil, W.C. 2.

E. M. R. (Swindon).—(1) The first-mentioned machine is an R.E. and the second a Bristol. (2) The "Spad" was illustrated in last week's issue of "FLIGHT." (3) "The Aeroplane Speaks" would probably meet your requirements. (4) A Temporary Capt., R.F.C., draws Captain's pay and does not revert to the rank of Lieut. unless the rank of Temporary Capt. was given him while engaged on some special duty, in which case he might, on being taken off such duty, revert to his former rank. (5) Yes. (6) There are several aeroplanes besides those built to R.A.F. designs in which four-bladed propellers are fitted.

J. K. (Newcastle).—So far as we are aware, there is no book published which deals with the question of jigs and jig making. We are afraid you will have to rely on your own ingenuity for any improvements on existing types of wing rib jigs.

J. W. T. (Eastbourne).—The subject of the most efficient number of blades to employ in an airscrew is much too extensive to be capable of being dealt with in this column. In a general way the four-bladed propeller revolving slowly is usually considered more efficient than the two-bladed

screw revolving rapidly. It should be remembered that there are other influences to be considered. Thus, for instance, the diameter of an airscrew is generally made as large as the design of the aeroplane will allow, but considerations of the head resistance of a very high undercarriage lead to a limiting size in screws. Here the four-bladed propeller may be employed to obtain the efficiency of the large diameter two-bladed screw without calling for an unnecessarily "stilty" undercarriage. Several "pusher" machines have been built in which the four-bladed screw was employed.

J. R. K. (Newcastle).—The reason why the sections used on full size aeroplanes are often found to give indifferent results on models is chiefly that in a model it is difficult to so attach the fabric that it follows with the desired amount of accuracy the curvature of the ribs, which latter, being of small size, are themselves difficult to make exactly to scale. It is, we believe, generally found that for model work a deeply cambered section is the best, and frequently single surface covering is employed. In the large scale model you have in mind it should be possible to follow fairly closely any given wing section, and we should think that the wing section known as U.S.A. 4, and of which full particulars are published elsewhere in this issue, would be found quite good for a large scale model.

A. S. (Lincoln).—Without knowing the actual resistance of a bun-shaped surface like the envelope of a parachute, it is difficult to calculate exactly the rate of dropping or, inversely, the area required to limit the rate of fall to a certain velocity. An approximate estimate may, however, be made by assuming that the parachute is a flat plate travelling normal to the relative wind. If we take the parachute as being of 28 ft. diameter, and the total weight (including pilot) as being 150 lbs., we can make use of the formula $R = KAV^2$, where R is the total resistance of the plate in lbs., K is a constant varying, however, with the size of the plate, A is the area of the plate, and V is the velocity in miles per hour. In our case R is therefore 150 lbs., K for a plate of the size of this parachute will be about .00327, and the area of a parachute of 28 ft. diameter will be taken as being roundly 600 sq. ft. We can now write

$$V = \sqrt{\frac{R}{KA}} = \sqrt{\frac{150}{.00327 \times 600}} = 8.7 \text{ m.p.h.,}$$

approximately, or 13.6 ft./sec., which should be a fairly safe speed at which to alight.

A New German "Invisible" Machine.

I LEARN from a reliable source that the Zeppelin works at Friedrichshafen are being used for the building of a new type of aeroplane, from which much is expected, says the *Daily Mail* correspondent at Vevey. The fuselage (carriage)

of the new machine is serpentine in form, and from both sides it is possible to emit dense clouds of smoke which entirely conceal the machine.

Last week the King of Bulgaria and his eldest son were present at the trials of several of the new aeroplanes.

SIX UNITED STATES ARMY WING SECTIONS.

By Captains EDGAR S. GORRELL and H. S. MARTIN, U.S.A.*

IN these days it is a matter of some difficulty to obtain data relating to modern wing sections, as tests made by M. Eiffel and the N.P.L. are not to be made public until after the war. The following particulars of six new sections evolved in America should therefore be of considerable interest inasmuch as some of them appear to be a considerable improvement on sections of which particulars were published before the outbreak of war. That sections as good as or better than these have been produced in Europe during the last year or so may be taken for granted, but details of such sections are not, as has already been pointed out, available for publication. Owing to the uncertainties arising out of the U-boat campaign, the copy of our American contemporary Aviation, to whom we are indebted for this interesting contribution, did not reach us, and we have therefore had to wait until we were able to procure another copy, hence the delay in giving our readers the benefit of the information in this report.—ED.

THESE wing sections, developed by the Aviation Section of the Signal Corps, offer considerable interest both from an aerodynamical and a structural point of view. Developed partly from the latter point, they have proved to be efficient and show very satisfactory lift coefficients.

Structural Development of the Sections.

In Fig. 1 are shown the dimensioned outlines of the six sections tested. Some of the considerations involved in developing the sections are interesting.

The U.S.A. 1 is a modification of the Clark aerofoil (characteristics and dimensions of which are described in Hunsaker's "Dynamical Stability of Aeroplanes"). This was an excellent high speed wing with a maximum lift-drift of 18. By increasing the depth at the position of rear spar, it was made structurally much more practical, the maximum lift was increased and the maximum lift-drift ratio only reduced very slightly.

The U.S.A. 2 has the same upper surface as the R.A. F. 3, but the lower surface has been modified and deepened from a structural point of view, without any loss from the aerodynamical point of view.

* By permission of Professor C. H. Peabody, Professor of Naval Architecture, in charge of Department of Aeronautical Engineering, Massachusetts Institute of Technology. Abstract by Alexander Klemin and T. H. Huff.

The U.S.A. 3 and U.S.A. 4 are both modifications of the U.S.A. 2. In the first section, the nose of a 30-in. chord has been moved forward $\frac{1}{8}$ -in., and the ordinates of the first fifth of the 30-in. chord spread out accordingly. In the U.S.A. 4, the nose of a 30-in. chord has been moved back $\frac{1}{8}$ -in. and the ordinates of the first fifth of the 30-in. chord crowded out accordingly.

The U.S.A. 5 was skilfully developed from both structural and aerodynamic considerations with very satisfactory results.

Results of Tests.

The tests were conducted under the standard conditions. Results for K_y , K_x , L/D and centre of pressure motion are given in Table 1, and in the curves of Figs. 2, 3 and 4. The wind tunnel speed was 30 m.p.h. in every case, and the models 18-in. span by 3-in. chord—the dimensions generally employed and useful on that score for purposes of comparison.

The National Physical Laboratory results, as published in the British Reports, are based on LV (chord of wing in feet \times velocity of relative wind in feet/second) values of 6.3. In Eiffel's large laboratory with greater wind speeds the values of LV range from 16 to 40. The Institute tests are conducted with an intermediate value of 11 for LV. It is, therefore, not possible to make strictly accurate comparisons without further tests which are now in progress at the Institute. It is, however,

AERODYNAMIC LABORATORY TESTS.

TABLE 1.

U.S.A. 1.					U.S.A. 2.					U.S.A. 3.				
L of i	K_y	K_x	L/D	C.P.	K_y	K_x	L/D	C.P.		K_y	K_x	L/D	C.P.	
-4°	.000399	.0001515	-2.64	..	.000228	.000147	-1.55	..		.000506	.0001589	-3.19	..	
-2°	.000156	.0000905	1.72	..	.000363	.000108	3.37	.733		.000420	.0001052	3.99	.676	
-1°	.000432	.0000700	6.15	.620	.000625	.0000943	6.64	.522		.000692	.0000845	8.20	.482	
0°	.000721	.0000653	11.00	.530	.000862	.0000872	9.88	.445		.000928	.0000835	11.10	.403	
1°	.000936	.0000670	14.00	.463	.001075	.0000816	13.26	.388		.001123	.0000856	13.10	.353	
2°	.001146	.0000688	16.60	.415	.001292	.0000848	15.22	.352		.001310	.0000889	14.75	.323	
3°										.001508	.0000893	16.16	.295	
4°	.001510	.0000860	17.50	.340	.001678	.0001027	16.34	.317		.001704	.0001073	15.88	.280	
5°										.001919	.0001180	16.18	.260	
6°	.001878	.0001158	16.20	.316	.002090	.0001320	15.80	.292		.002520	.0001823	13.82	.230	
8°	.002230	.0001558	14.30	.303	.002432	.000175	13.88	.276		.002905	.0002290	12.70	.220	
10°	.002580	.0002055	12.60	.290						.003160	.0002830	11.15	.208	
12°	.002910	.0002595	11.20	.283	.003179	.000270	11.75	.255		.003235	.0003142	10.30	.204	
13°										.003240	.0003410	9.50	.197	
14°	.003165	.0003040	10.40	.274						.003215	.0003780	8.50	.197	
15°										.003155	.0004460	7.02	.197	
16°	.003165	.0003710	8.50	.276	.003362	.000410	8.20	.247		.003125	.0006620	4.73	.236	
18°	.003080	.0005520	5.60	.310	.003100	.000701	4.41	.228		.002889	.0008570	3.37	.266	
20°	.002882	.0008500	3.40	.360	.002770	.000871	3.18	.230						

U.S.A. 4.					U.S.A. 5.					U.S.A. 6.				
L of i	K_y	K_x	L/D	C.P.	K_y	K_x	L/D	C.P.		K_y	K_x	L/D	C.P.	
-4°	.0001231	.0001640	-0.75	..	.000326	.0001500	-1.58	..		.000276	.0001395	-1.98	..	
-2°	.0005200	.0001150	4.52	.670	.000346	.0000948	3.64	.753		.000272	.0000793	3.43	.910	
-1°	.0007650	.0001078	7.11	.525	.000636	.0000830	7.67	.566		.000567	.0000671	8.46	.600	
0°	.0009750	.0001032	9.44	.461	.000910	.0000741	12.28	.498		.000845	.0000650	13.00	.498	
1°	.0011840	.0001002	11.80	.416	.001145	.0000803	14.28	.444		.001057	.0000668	15.88	.458	
2°	.0013820	.0000995	13.90	.388	.001355	.0000863	15.72	.415		.001255	.0000733	17.15	.439	
3°					.001565	.0000966	16.21	.377		.001455	.0000858	16.98	.402	
4°	.0017700	.0001115	15.88	.347	.001740	.0001092	15.98	.348		.001662	.0000976	17.05	.388	
5°	.0019800	.0001340	14.80	.330	.001950	.0001290	15.35	.337		.001846	.0001121	16.48	.365	
8°	.0025600	.0001900	13.50	.298	.002470	.0001830	13.52	.315		.002415	.0001665	14.50	.322	
10°	.0029900	.0002555	11.70	.273	.002870	.0002380	12.08	.303		.002650	.0002160	12.27	.306	
12°	.0033100	.0003100	10.67	.276	.003130	.0002890	10.84	.300		.002861	.0002820	10.15	.310	
13°					.003240	.0003290	9.84	.298		.002910	.0003260	8.94	.310	
14°	.0036000	.0003545	10.15	.276	.003285	.0003545	9.25	.288		.002980	.0004050	7.37	.310	
15°					.003235	.0003910	8.28	.292		.002960	.0005300	5.58	.328	
16°	.0036150	.0004430	8.15	.276	.003205	.0004210	7.63	.298		.002900	.0006380	4.55	.346	
18°	.0034700	.0005580	6.22	.303	.003150	.0006900	4.57	.330		.002790	.0007900	3.53	.365	
20°	.0031000	.0007640	4.06	.335	.002790	.0008200	3.41	.368		.002585	.0009000	2.88	.388	

L of i = Angle of wing chord to wind.

lbs./sq. ft./m.p.h. L/D = Ratio of lift to drift.

Model: Size, 18 ins. \times 3 ins. (54 sq. ins.). Material, brass.

of standard air: .07608 lbs./cub. ft.

K_y = Lift coefficient in lbs./sq. ft./m.p.h.

C.P. = Distance of C.P. from leading edge, in fractional part of

Velocity of wind: 30 m.p.h.

Density

perfectly clear that, apart from the good structural features, the sections have remarkably good aerodynamic properties.

In Table 2, comparative figures for the six sections are set out in accordance with the plan employed, in the Course in Aerodynamics and Airplane Design (*Aviation and Aeronautical*

Engineering, October 1st, 1916), together with values for the R. A. F. 3, R. A. F. 6, and Eiffel 32; the drift and L/D values for the latter being subject to revision as stated on completion of above tests.

For none of the wings does the maximum K_y fall below

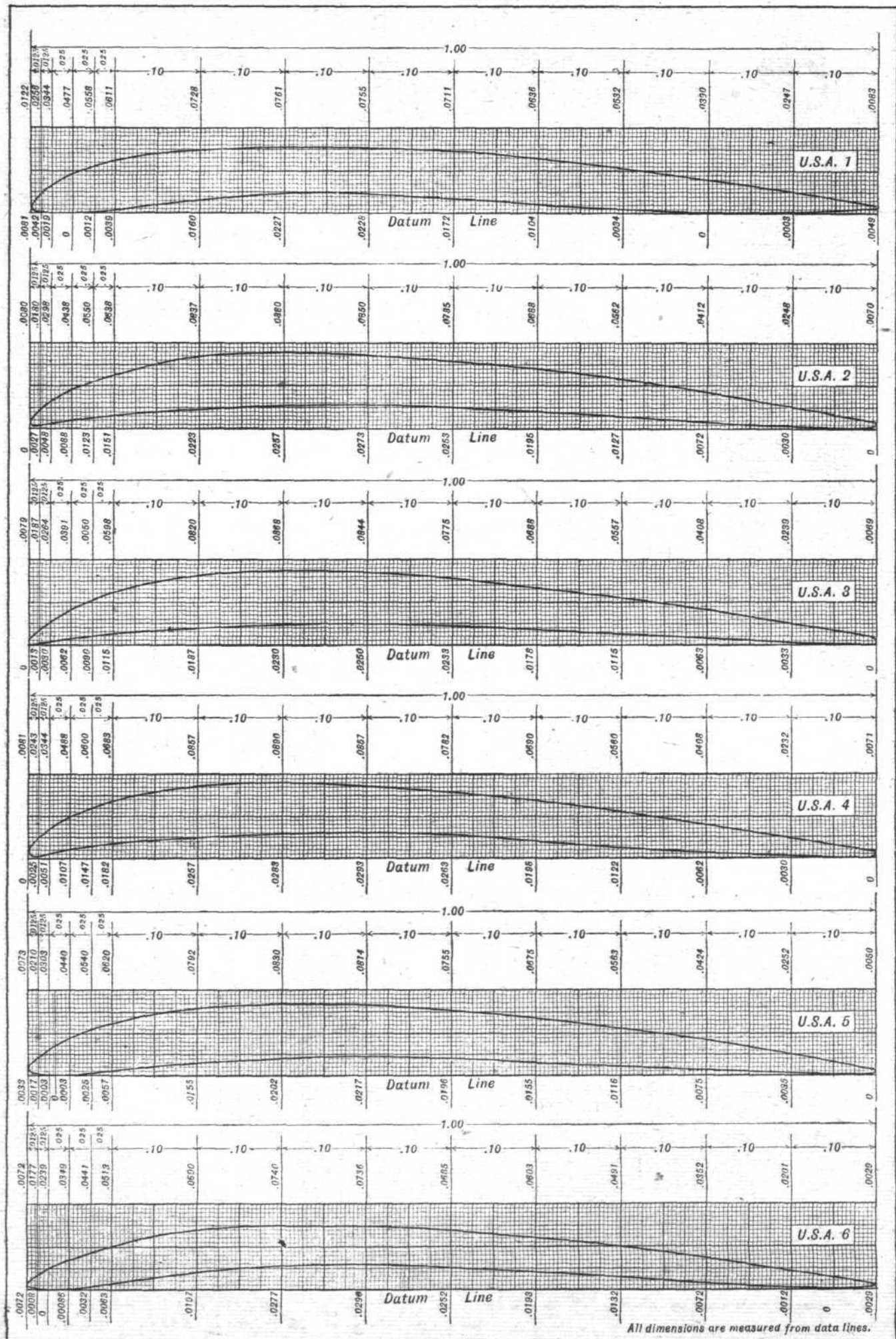


Fig. 1.

.003, except almost negligibly so for U.S.A. 6. For all the wings, there is a wide range of working angles. None of them exhibit a sharp drop at the burble point. With the exception

of U.S.A. 4, they all have good maximum values of L/D at the small value of $K_y = .00086$. From the centre of pressure curves in Fig. 4, it is seen that none of the wings may be said

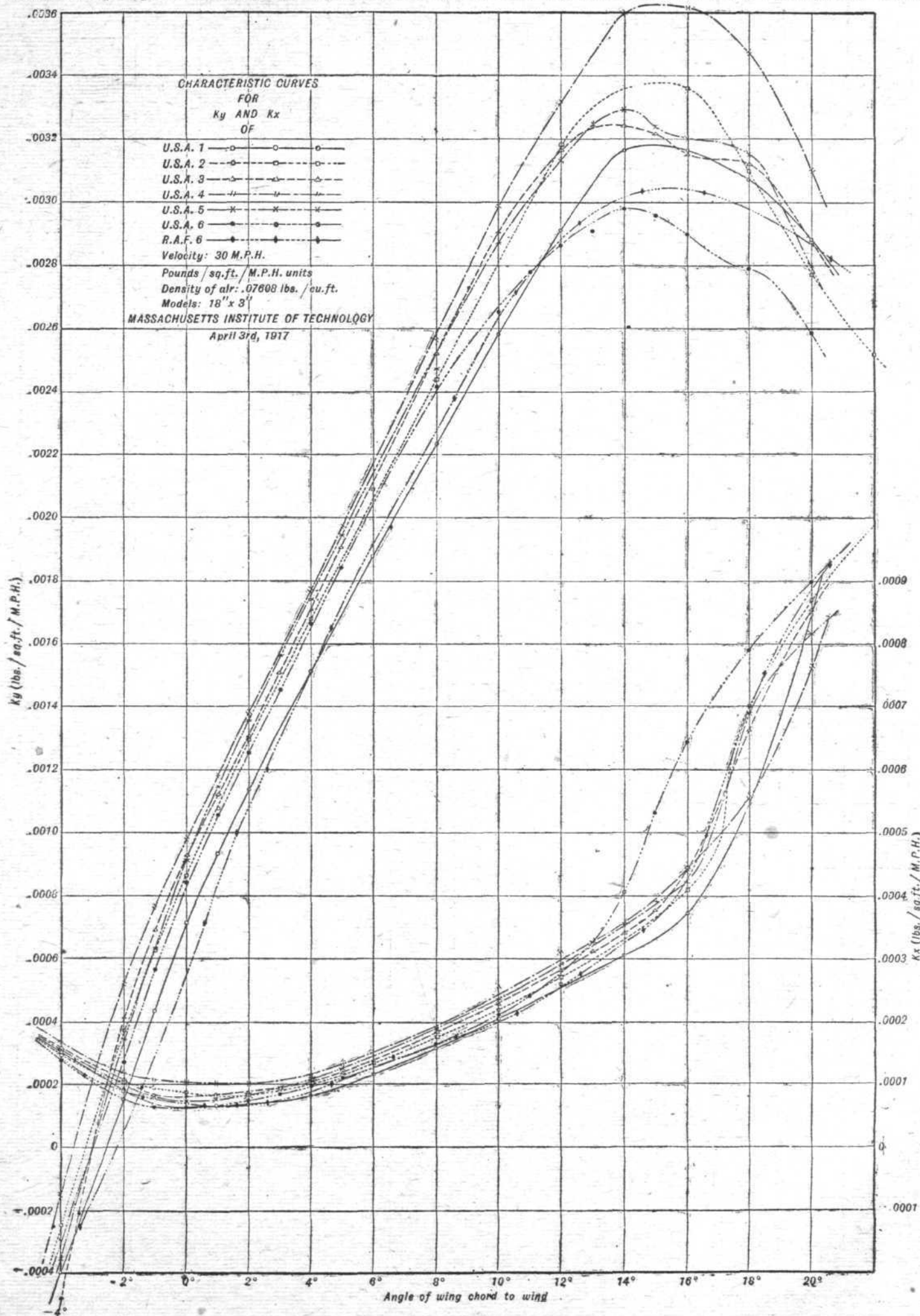


Fig. 2.

Fig. 3.

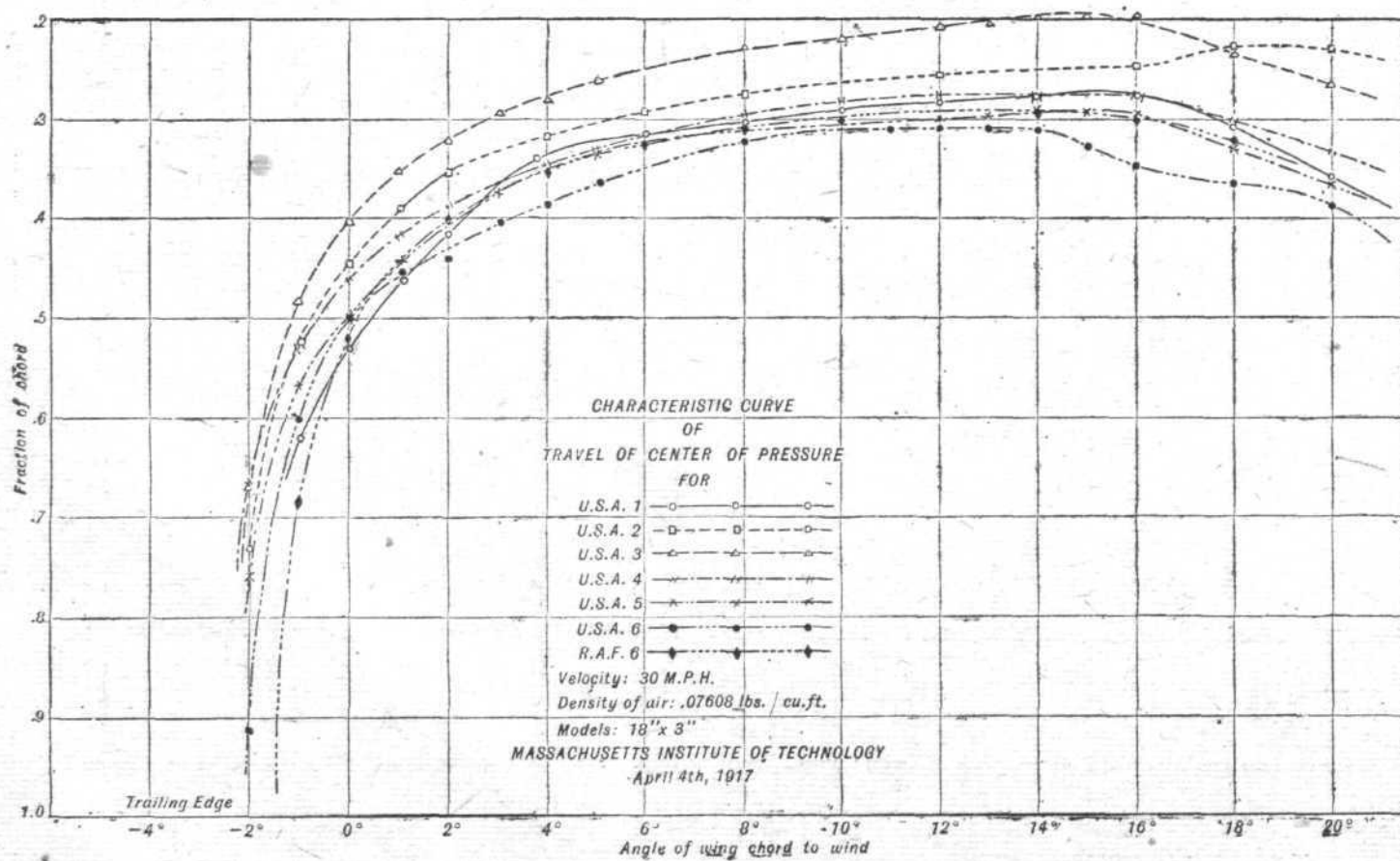
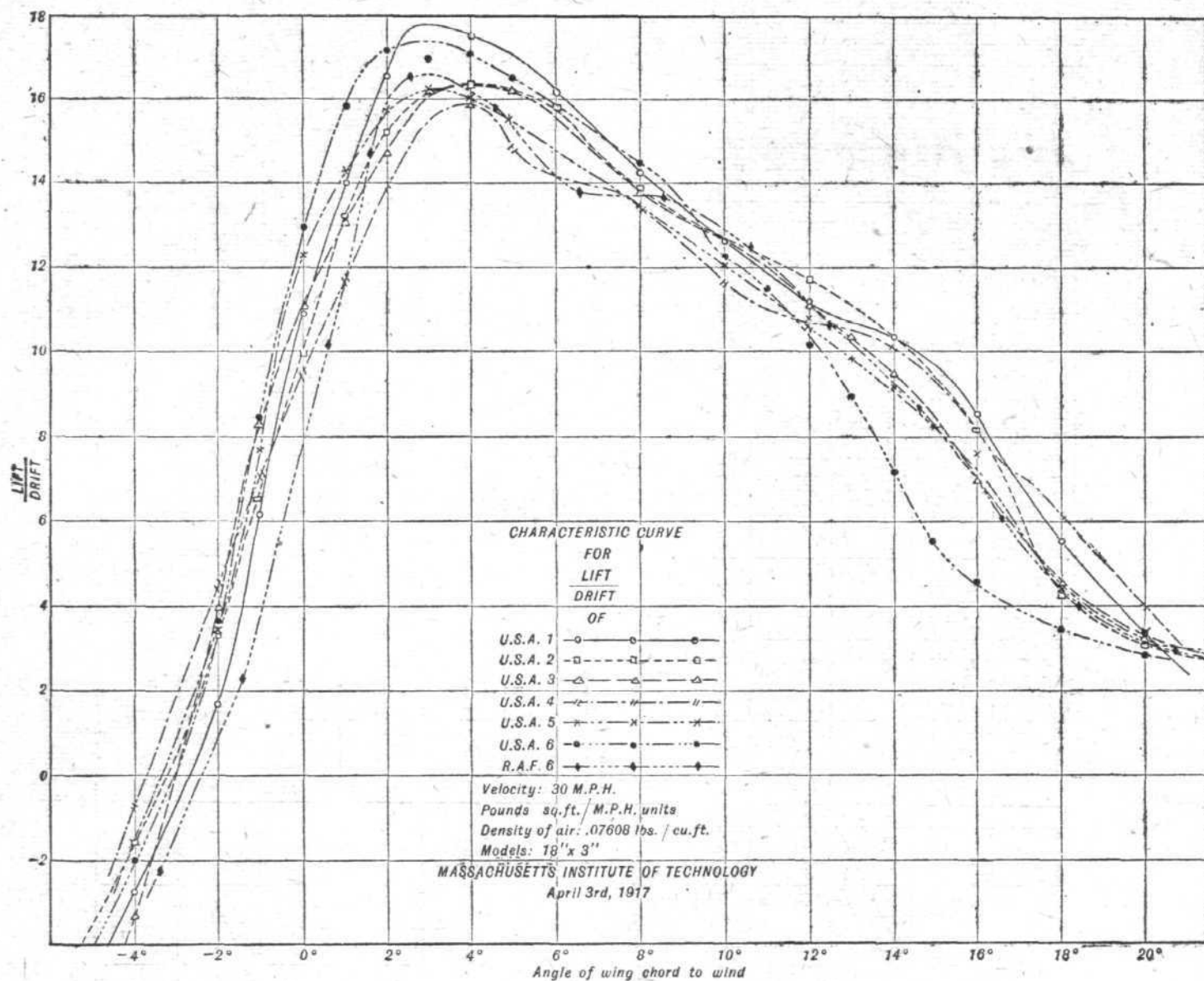


Fig. 4.

TABLE 2.

Aero-foil.	LV.*	Maximum L/D.		Maximum K_y .		$K_y = .00086$	
		Angle in degrees.	L/D.	Angle in degrees.	K_y .	L/D.	Angle in degrees.
U.S.A. 1	11	3.0	.00133	17.8	15.0	.00318	9.6
U.S.A. 2	11	4.0	.00169	16.3	15.0	.00337	9.3
U.S.A. 3	11	4.0	.001704	16.4	13.6	.003243	9.8
U.S.A. 4	11	4.0	.00177	15.88	15.0	.00364	9.1
U.S.A. 5	11	3.0	.001565	16.21	14.0	.003285	9.25
U.S.A. 6	11	3.0	.001455	17.4	14.0	.00298	7.37

Foreign Sections.

Aero-foil.	LV.*	Maximum K_y .		Maximum L/D.		$K_y = .00086$	
		Angle in degrees.	L/D.	Angle in degrees.	K_y .	L/D.	Angle in degrees.
Eiffel 32	49	..	0.00280	..	3.0	0.00103	18.2
R.A.F. 3	6.3	15.7	0.00347	7.8	5.0	0.00195	14.3
R.A.F. 6	6.3	15.4	0.00310	7.8	4.9	0.00157	14.6

* LV = chord of wing in ft. x relative wind in ft/sec.

to be longitudinally stable, but none of them have a violent centre of pressure motion within the usual range, and with modern non-lifting tail surfaces, no difficulty would be met in securing longitudinal stability.

It is noteworthy that the U.S.A. 4 has a higher maximum lift coefficient than almost any wing section tested, $.00364$, compared with $.00347$ of the R.A.F. 3. It should have an L/D of approximately the same value and is far better structurally. This wing would seem to be particularly suitable for very heavy machines, such as seaplanes.

U.S.A. 1 has a higher lift than Eiffel 32—namely, $.00318$, compared with approximately $.00280$, and its maximum L/D of 17.8 would, in the Eiffel tunnel, probably exceed the 18.2 of the French wing. Although for small values of K_y and high speeds, the Eiffel 32 has better efficiency, U.S.A. 6, also with a higher maximum lift, would compare most favourably in a high speed machine with any French wing of which data has hitherto been published. For pursuit machines, the choice between U.S.A. 1 and 6 would be very close. U.S.A. 1 would give a better landing speed, and U.S.A. 6 is slightly more efficient at low angles and high speeds.

U.S.A. 2 and 3 would be good all round wings apparently slightly better than the R.A.F. 6.

An interesting feature of the series is the successful employment of heavy camber on upper and lower surfaces. It has been commonly accepted that heavy camber meant increase in lift, with corresponding decrease in efficiency, while lightly cambered wings would give high efficiency but low lift. With skilful design, it is apparently possible to retain both good features.

AVIATION IN PARLIAMENT.

Aliens and Aeroplane Testing.

MR. BOWERMAN, in the House of Commons on August 14th, asked the Under-Secretary of State for War whether enquiry has been made regarding the employment of other than British subjects upon the testing of aeroplanes at the Hendon works, as set forth in a written communication forwarded to the War Office on July 24th; and, if so, will he state the result of such enquiry?

MR. MACPHERSON: I am enquiring into the case of which my right hon. friend sent me particulars. I am informed that no one, other than the R.F.C. pilots, is employed in testing for the military establishment at Hendon, and I understand that no one, other than R.N.A.S. officers and ratings, is employed there in the R.N.A.S. establishment.

MR. BOWERMAN: Will the particular case of the man whose name I gave be enquired into?

MR. MACPHERSON: I am enquiring into that particular case.

Air Raid Warnings.

MR. BILLING: With the leave of the House, may I ask the right hon. gentleman the Leader of the House whether the Government have any power to insist on a system of warning being introduced into any given town in England, or whether it is purely left to the local authorities; whether his attention has been drawn to the casualties which occurred at Southend on Sunday, which could have been avoided by giving warning in that case, the authorities having had over half an hour in which to give warning, and no warning was given; and whether, under the circumstances, under the Defence of the Realm Act, the Government have power to insist that in towns a system of warning shall be introduced?

MR. BONAR LAW: I really do not know what the powers are, without notice, but I shall discuss the matter with my right hon. friend the Home Secretary.

Engineering Apprentices and R.F.C.

MAJOR H. TERRELL, on August 15th, asked the Under-Secretary of State for War whether he is aware that early this year the War Office issued notices stating that apprentices of 18 years of age joining the Army would have the option of joining or being transferred to the Royal Engineers or the R.F.C.; that several apprentices, on the faith of such notice, joined the Army, and have been drafted into infantry regiments and refused the option of joining or being transferred to the Royal Engineers or R.F.C.; and whether he proposes to take any action in the matter?

MR. MACPHERSON: Apprentices in the engineering trades, if they pass a trade test, are posted to a technical corps, among which are included the Royal Engineers and R.F.C. I am not aware that there has been any departure from this practice, and I should be grateful to my hon. and gallant friend if he would supply me with the regimental numbers, names and units of the men to whom he refers.

Royal Flying Corps Camp, Coventry.

MAJOR HUNT asked whether the site of the R.F.C. camp at Coventry was previously condemned as totally unfit for German prisoners, who were therefore settled in a healthy place some way off; whether it has again been condemned; and, seeing that it has a large open drain running through it, how much longer our men are to be kept in this camp?

MR. MACPHERSON: It will be necessary to make enquiries in this matter. I have called for a report, and will inform my hon. and gallant friend of the result as soon as possible.

Air Raid Warnings.

MR. BILLING, on August 16th, asked the Prime Minister whether he can now state whether the Government propose to insist that all towns shall immediately introduce some system of warning of the approach of enemy aeroplanes?

SIR G. CAVE: My right hon. friend has asked me to reply to this question. The issue of any public warning outside the Metropolitan Police district must generally be left to the local authorities, who know the local circumstances and the wishes of the inhabitants; but the Home Office will be glad on application to give any advice or assistance which may be desired.

MR. BILLING: Is the right hon. gentleman aware in this case that it has been publicly stated that the reason why the warnings were not given at Southend

was because of official representations from London, and under the circumstances will he say—

MR. SPEAKER: The hon. member had better give notice. That does not arise on the question.

SIR G. CAVE: May I be allowed to say that no representations came from the Home Office?

MR. BILLING: May I ask the right hon. gentleman on that, whether he will state publicly that neither the Home Office or any authority in London has any objection to any place in London or any town in the country introducing any system of warnings that it may see fit to do?

SIR G. CAVE: I believe that for certain reasons the military authorities have given special directions in different towns, but these directions do not apply to any town but the one specified.

MR. BILLING asked the Home Secretary whether, in view of the probability of aeroplane raids by night in the near future, he will take steps to introduce a system of night warnings operative up till midnight?

SIR G. CAVE: The warnings by sound signal are intended for air raids by day only, that is, between half an hour before sunrise and half an hour after sunset. Should an air raid occur during the hours of darkness between half an hour after sunset and midnight, when there is less real danger than by day, but much greater risk of a false alarm, the sound signals will not be fired, as they would unnecessarily disturb persons already under cover, but the police will circulate through the streets carrying the "Take cover" placards so that pedestrians may seek cover.

MR. BILLING: Will the right hon. gentleman see that all theatres and other places of amusement where people congregate in large numbers are duly warned in time?

SIR G. CAVE: I believe they are warned directly by the authorities.

Supply of Spare Parts.

MR. MONTAGUE BARLOW asked the Parliamentary Representative of the Air Board whether there is still, in spite of repeated assurances, a great deficiency of spare parts for the service type of machine?

THE PARLIAMENTARY SECRETARY to the Air Board (Major Baird): There is still a shortage of spare parts for certain types of machines, but the position has improved since I was last questioned on this subject.

MR. BILLING: Is it not the case that in spite of the fact that there is a shortage of these parts that they are still having to make spare parts for machines which will never be used?

MR. PRINGLE: And making machines as well.

MAJOR BAIRD: I am aware of the facts, but that is not a fact.

MR. BILLING: If the facts are put before the hon. and gallant member now for the first time will he see that some action is taken, and use what influence he can with the Air Board?

London Anti-Aircraft Stations.

MR. O'GRADY, on August 20th, asked the Parliamentary Representative of the Air Board whether the conditions of service have been, or are about to be, altered at certain anti-aircraft stations in the London area; if so, whether these altered conditions are such as to involve the discharge of a number of trained men from the Anti-Aircraft Corps; what is the number of men involved, how many are trained gun-layers, and what is their average length of service; whether the efficiency of these men has been admitted by their being urged to volunteer to continue service under the new conditions, and how many have found it possible to do so; whether the stations concerned have been efficiently manned and satisfactorily carried on under the old conditions; and whether, in order to obtain paper uniformity, he will explain why untrained recruits are substituted for skilled and experienced men?

MR. MACPHERSON: The answer to the first part of the question is in the affirmative, but it applies to one gun station and light station only. Several men were anxious to take their discharge, and only those who wished were discharged on account of the reorganisation. About eighty-four men were involved, of whom fourteen were trained gun-layers of average length of service of two years. The changes in organisation were made as the half-time system for gun numbers did not prove satisfactory. Twelve men availed themselves of the offer to remain on other employment as half-timers. The changes were not made to secure paper uniformity, but to improve the efficiency of the service. The men replacing those on the guns were all trained men.

AIRISMS

FROM THE FOUR WINDS

THIS war is, indeed, responsible for many a quaint quandary for the man in the street to solve. It would now appear that so long as your next door neighbours render their roofs bomb-proof against aircraft bombing, you are doubly insured if you happen to be the house in between. This is a discovery which has been made by the *Law Journal*. The question has arisen over the practice of protecting the roofs of large buildings containing property of special value with bomb-proof shelters and sandbag contrivances to throw off bombs. Is it legitimate, asks the *Law Journal*, to erect on your land a structure which protects it against a nuisance but does so by turning the nuisance on to your neighbours? The general rule of law was settled as recently as 1911 in a case in which a South African farmer escaped a plague of locusts by lighting fires on the verge of his land, which drove them on to neighbouring farms. It was held in that case that the occupier of premises when a nuisance is on his land, must abate it at his own peril; he cannot turn it off to the land of a stranger. But before a nuisance has reached his land he can take steps to prevent its entrance, even if the inevitable result is to turn it on to the property of others.

At first sight, adds the journal, it might seem that the building-owner may protect his building against enemy nuisances by abating them before they reach his premises; but, alas, there is a doctrine of the Common Law which says that the owner of land owns all above and below his land in the same vertical plane. It would seem, therefore, that the bomb is already on his land before it reaches the building at all—unless it comes at a very great angle, which is hardly possible. So the building-owner who uses protective bomb-proofs is abating a nuisance on his own land, and must do it in such a way as not to endanger his neighbours.

INCIDENTALLY, if the reading of our contemporary is correct, it settles the question which has from time to time arisen as to who *does* own all above a man's property, and how far that ownership extends. So there is still hope in the doubt. Anyway, when it comes to settling the doubt, you may be sure the lawyers will not lose over much in its settlement.

WHAT strange foretelling of events to come are from time to time brought to light. In these pages have appeared all sorts of old-time prophecies as to riding the wind, &c. And

now a correspondent, "C.R.," draws attention to the air-raid menace as forecast in 1759 by Dr. Samuel Johnson in Chapter VI of "Rasselas." The paragraph runs as below:—

"If men were all virtuous I should with great alacrity teach them to fly. But what would be the security of the good if the bad could at pleasure invade them from the sky? Against an army sailing through the clouds neither walls, mountains nor seas could afford security. A flight of savages might hover in the wind and light with irresistible violence upon the capital of a fruitful region."

"OUR airmen have simply owned the air since the attack began." The *Times* Special Correspondent at Headquarters in France, writing on August 19th upon "The truth about Langemarck."

FRANKFORTERS are horribly upset at being pilled from above, and urgently insist upon reprisals. Unlike the strongly entrenched and fortified town of Southend, they claim that Frankfort, in spite of its being the headquarters of a German Army Corps, is an entirely undefended city. This Hun agitation gives an idea of what any extended reprisals on our part would bring about. All the same, the form the Allies' reprisals are taking on the Belgian coast and round about the Flanders front away up to Verdun, and again on the Italian line of action, is having a very salutary effect upon the air evolutions of the enemy. We can leave our other reprisals for a bit until we are more conveniently placed on Belgian soil and have a greater margin of "Baby" machines to spare for the job.

TEN YEARS AGO.

Excerpts from the "AUTO." ("FLIGHT's" precursor and sister Journal) of August, 1907. "FLIGHT" was founded in 1908.

PRIZES FOR AERIAL MOTORS.

A German society devoted to aeronautics has offered prizes to the value of £1,000 as a stimulus to German inventors to turn their attention to the design of suitable engines for use on airships. These prizes are restricted to machines of German manufacture, which must be of at least 20 h.p. Among those on the committee are Major Gross, the constructor of the present German war balloon; Prof. Klingenberg a director of the well-known A.E.G. Co.; Prof. Slaby; and Major von Parseval.



The latest Curtiss triplane flying boat.

AIRCRAFT ENGINEERING NOTES.

The Petroleum Production Bill.

THE ever-increasing demand for power and speed in aircraft engines and the consequent enormous increase in the amount of motor spirit required for aviation renders the Petroleum Production Bill introduced by the Secretary for the Colonies in the House of Commons on August 15th of considerable moment to the industry. The Bill makes provision with respect to the searching and boring for and the getting of petroleum—which term includes petroleum and natural gas and their relative hydrocarbons (excluding coal and bituminous shales) existing in their natural condition in strata—in the United Kingdom. It provides that the Crown shall have the exclusive right of boring for and getting petroleum, and if any person without a licence gets petroleum he shall forfeit a sum equal to three times the value of the petroleum obtained. Royalty at the rate of 9d. for every ton of petroleum or one penny for every 10,000 cubic feet of natural gas is to be paid into a special fund called the Petroleum Royalties Fund in respect of all petroleum gotten on behalf of His Majesty out of moneys provided by Parliament, or by a person holding a licence under the Act. Subject to the payment of expenses, the sums paid into the fund shall be distributed among the persons interested in the land in the area in such proportion as may be prescribed, and where operations for the getting of petroleum are commenced in any district, the Board of Trade shall prepare a scheme defining the area in which the persons interested in the land are entitled to receive payments.

To the Board of Trade is delegated the right to search and bore for and get petroleum and to issue licences for such consideration as the Board think fit. The Railway and Canal Commission are appointed to decide as to who are entitled to payments out of the Royalties Fund and as to how payments are to be made. A penalty of three months' imprisonment or a fine of £50, or both, is provided for any person who refuses to give necessary information or who gives false information.

A Complete Aero Engine.

ONE way—especially beloved of the inventor—of comparing aero engines is by weight per horse-power, but each and every one puts a varying interpretation upon that term as regards the items to be included in the weight of the engine. In the course of its labours, the aeronautic division of the Standardisation Committee of the American Society of Automotive Engineers has tackled the subject with the following result:—

"A complete aeronautic engine is considered to include all component parts for proper functioning, with the exception of the following: Gasoline tanks, independent piping and hose, radiator and starter equipment, muffler and muffler pipes, oil cooler and independent sump. Tachometer drive attachment is to be included, but not the tachometer or flexible shaft. Electric ignition equipment is included, but not the connecting wires. The propeller flange, hub and bolts are to be included, but not the propeller. A complete set of tools is to be furnished with each engine."

A New Aluminium Alloy.

IN the endeavour to find an alloy combining lightness with strength, many metals have been tried in combination with aluminium. The merit of originality can certainly be claimed for the latest project, for it is claimed that by combining about 8 to 10 per cent. of calcium, an alloy is obtained

which is 5 to 20 per cent. lighter than aluminium, and possesses machining properties superior to aluminium or any of its other alloys. It is suggested as being specially suitable for light castings such as aeroplane fittings, possessing the advantages of low specific gravity, the best machining properties it is possible to obtain and freedom from brittleness, while it should be capable of taking the finest impressions from the mould.

It would appear that the calcium acts as a flux and a detergent or purifier, converting the aluminium into a true homogeneous metal with the qualities that go therewith, and preventing the formation of oxide while the original melt or the subsequent castings are being made. Naturally this alloy cannot be made by simple fusion of the mixed metals because the calcium itself burns, even when heated at a low temperature. To make the alloy, calcium in small pieces is pushed under the surface of the melted aluminium and held there until melted.

The Supply of Spruce.

WITH a view to economising in the supply of aircraft spruce, conferences have recently been held in Washington and on the Pacific Coast between representatives of the U.S. and Allied Governments and the leading lumbermen from the spruce-supplying districts. The result has been that the lumbermen have drawn up the following specifications, which it is hoped will eliminate the waste and confusion which now arises from improper sawing. The specifications it is understood have received the informal approval of the Government representatives:—

Thickness—2 to 6 in. inclusive. At least 60 per cent. to be 3 in. and 4 in. thick. Not more than 40 per cent. 2 in., 5 in. and 6 in. thick.

Width—All to be 4 in. and wider; not over 10 per cent. under 5 in. wide.

Length—50 per cent. to be 18 ft. and longer. 50 per cent. to be 4 ft. and longer.

Measurement—Width and thickness fractional. Lengths in multiples of 1 ft.

Grain—All lumber 3 in. and thicker shall be not less than 70 per cent. vertical grain of an angle of 45° to 90° on each carload. All lumber 2 in. thick shall be not less than 30 per cent. vertical grain of an angle of 45° to 90° on each carload.

Grades—The grades agreed are as follows:—The 50 per cent. of all lumber 18 ft. and longer shall be clear four sides, straight grained, not less than six annular growth rings for each 1 in., sound and well manufactured, free from shakes, spiral and curly grain. This grade will admit of bright sap, wane, pinworm holes, slight variations in sawing, or other defects that will not impair its use for wing beams.

The 50 per cent. of all lumber 4 ft. and longer shall yield clear cuttings, straight grained, not less than six annular growths per each 1 in., sound and well manufactured, free from shakes, spiral and curly grain; some may contain knots, pitch pockets, wane, pinworm holes, slight variations in sawing and other defects that will not impair its use for the purpose intended, providing, however, that each piece must produce, for buyer, clear straight grain, cuttings from 4 ft. lengths to 17 ft. lengths, which shall not include over 5 per cent. of such cuttings 4 ft. to 7 ft. inclusive.

The lumbermen have offered to supply all the spruce needed for the coming year at \$105 per 1,000 ft., which it is stated is about one-half that which has been paid up to now by many of the U.S. aeroplane manufacturers.

Advance in Aircraft Workers' Pay.

WOODWORKERS engaged on the manufacture of aircraft have been awarded a wages advance of 3s. a week, to date from August 1st.

Carpentier Retires from French Army.

THE *Journal du Peuple* says that the boxer Georges Carpentier, who has been for two years in the French Air Service, has been relieved of further military service on account of "weakness of constitution."

His friends state that he is contemplating a visit to the United States.

French Airship v. U-Boat.

THE French airship *Lorraine*, of the naval air centre at Bizerta, returning at nightfall on Sunday from a cruise for the protection of a convoy, saw a U-boat and bombed it repeatedly, observing explosions. Having wirelessed its position, it again passed the locality where the submarine had disappeared and dropped more bombs.

Italian Seaplane Sinks U-Boat.

A MESSAGE from Rome on August 20th states that two days previously an Italian seaplane bombed and sank, by direct hits, an enemy submarine in the mid-Adriatic.

German Aeroplanes in Holland.

FROM Amsterdam it is reported that on August 18th, at 8 a.m., about 30 German aeroplanes passed over Aardenburg in Zeeland, going in a westerly direction, apparently, from later information, with England as their objective. They were fired on by the Dutch guards without result. Machines of unknown nationality passed over the islands of Schouwen and Goedereede and dropped bombs, but fortunately no one was injured and the material damage was slight.

The Dutch guards at Beerta fired on and brought down a German machine with three passengers, while another was forced to land at Blyham, where it was set on fire by the occupants. Later reports state that two other machines were severely damaged by the Dutch fire, but succeeded in getting across the frontier into Belgium.

The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

Admiralty, August 14th.

The following have been entered as Prob. Flight Officers (Temp.), seniority Aug. 5th, and appointed to "President," additional, for R.N.A.S.: F. R. Alford, B. J. E. Anson, W. Bentley, C. F. Colman, H. A. Connop, J. P. Crawford-Wood, W. V. Dunfee, W. S. B. Freer, W. D. Gairdner, K. R. Goodacre, D. Montague-Hamblly, C. H. J. Holden, E. H. Hore, H. V. M. Hoskins, F. Jardine, R. A. McCance, R. C. Maxwell, E. E. Morgan, F. Newton, J. E. Ostler, J. H. Patterson, L. F. Pendred, W. C. Pitty, B. N. Radford, A. W. E. Reeves, W. G. Savage, G. F. Smith, F. C. Stovin, J. A. Stronach, H. G. Sullivan, E. C. Usher, C. A. Wedekind, L. M. Whittington, C. F. R. Woolnough and G. F. Young.

Lieut. (C.E.F.) R. F. Ely entered as Prob. Flight Officer (Temp.), seniority Aug. 5th.

A.M.I. (E.) P. H. Maskell entered as Prob. Flight Officer (Temp.), seniority Aug. 5th.

R. I. D. Smith entered as Prob. Flight Officer (Temp.), seniority Aug. 6th. C.P.O. (11) A. W. T. Powell granted a temp. commission as Lieut. (R.N.V.R.), seniority Aug. 10th, and appointed to "President," additional, for R.N.A.S.

W. Evans granted a temp. commission as Lieut. (R.N.V.R.), seniority Aug. 7th, and appointed to "President," additional, for R.N.A.S.

Admiralty, August 15th.

C. A. Bradham and F. Porter entered as Prob. Ob. Officers, seniority Aug. 13th.

E. W. M. Wheldon granted a temp. commission as Lieut. (R.N.V.R.), seniority Aug. 12th.

Admiralty, August 17th.

The following Prob. Flight Officers promoted to Temp. Flight Sub-Lieuts., with seniority as stated: W. Henson; May 21st. G. O. Roper and A. Ward; May 30th. P. W. Inwood; May 21st. W. G. Pegg and E. W. Harber; May 28th. H. R. Moore; June 29th. R. W. Andrew; June 5th. A. M. Ross; May 29th. R. S. Goddard, O. B. Howell and W. B. Higgins; June 5th. H. K. Dudley-Scott; June 22nd. H. W. Lee; April 26th. W. P. Renshaw; May 29th. L. Balfour; Mar. 29th. G. Wake; April 29th. H. Cubert; May 14th. M. H. Whiteledge; April 11th. R. G. W. Martin; April 14th. J. A. Yarrow, H. L. Murphy and F. Kershaw; April 11th. C. L. Bruce and T. H. Whitby; May 29th. T. A. Byers; June 28th. O. S. Stiles; May 25th. W. J. Rawson; May 21st. B. A. Simson; April 20th. C. Hayward; April 24th. S. H. Gudgan; May 1st.

The following have been entered as Temp. Prob. Flight Officers, all to date Aug. 20th: G. G. Kell, J. Maxwell, D. J. Dorey, H. E. Symons and B. C. Woodward.

Admiralty, August 18th.

Prob. Flight-Comdr. M. C. Brotherton confirmed in rank of Flight-Comdr.; July 18th.

Flight Sub-Lieut. E. B. Devereux promoted to rank of Flight-Lieut., seniority May 18th.

The following Prob. Flight Officers (Temp.) have been promoted to rank of Flight Sub-Lieut. (Temp.), seniority as stated: C. G. Wigglesworth; May 3rd. L. Chivers, W. Righton; June 3rd. J. W. D. Cripps; July 3rd. R. W. Helmsley; July 18th.

Prob. Flight Sub-Lieut. A. C. Jelf confirmed in rank as Flight Sub-Lieut.; July 3rd.

R. G. H. Stone entered as Prob. Flight Officer, seniority Aug. 19th.

Prob. Flight Officers (Temp.) F. G. Redward and J. W. C. Reynall, both granted temp. commissions as Sub-Lieut. (R.N.V.R.), seniority Aug. 19th.

H. F. Mercer and J. T. Taylor both entered as Lieuts. (Temp.), R.N.V.R., seniority Aug. 17th.

Admiralty, August 20th.

Prob. Flight-Comdrs. W. Pennefather and G. G. H. Cooke both confirmed in rank of Flight-Comdr., seniority July 4th.

The following have been entered as Prob. Flight Officers, seniority Aug. 12th: L. G. Semple, H. E. Forrow, S. C. Joseph, E. Swale, H. D. Evans, W. A. Stott, E. E. P. Smith, G. W. Stallard, R. I. Whiteley, W. A. Rahm, L. Shelton, H. Mitchell, N. M. MacRobert, G. W. Graham, G. S. Cowie, J. M. Dunn, G. A. Bird, V. L. Barber, K. R. Cole and O. F. Meyer.

Aircraftsman (2nd Gr.) C. B. Collins entered as Prob. Ob. Officer (Temp.), seniority Aug. 25th.

A.M.I. S. T. Marrs entered as Prob. Ob. Officer (Temp.), seniority Aug. 25th. Warrant Tel. (R.N.R.) S. E. S. McLeod entered as Ob. Officer (Temp.), seniority Aug. 18th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, August 13th.

Attached to Headquarters Units.

Brigade Commander.—Major (Temp. Col.) R. E. T. Hogg, C.I.E., Ind. Cav., from a Group Comdr., R.F.C., and to be Temp. Brig.-Gen. whilst so employed; June 22nd.

London Gazette Supplement, August 14th.

The following appointments are made:—

Flight-Commanders.—From Flying Officers, and to be Temp. Capts. whilst so employed: Lieut. H. V. Acland, Can. Local Forces; Mar. 24th. Lieut. W. H. Dore, S.R.; April 26th. Lieut. V. W. B. Castle, S.R.; April 30th. Lieut. J. A. Coats, S.R.; May 4th. Temp. Capt. R. E. Saul, Gen. List, from a Flying Officer; July 9th. From Flying Officers, and to be Temp. Capts. whilst so employed: Temp. 2nd Lieut. A. R. Penny, Gen. List; July 21st. 2nd Lieut. G. H. S. Dinsmore, S.R.; July 23rd. Capt. G. Maxwell, Yeo. (T.F.), from a Flying Officer. From Flying Officers, and to be Temp. Capts. whilst so employed: Temp. 2nd Lieut. F. Libby, M.C., Gen. List; July 26th. and Lieut. (Temp. Lieut.) T. S. Roadley, S. Staff. R., S.R.; July 28th. Temp. 2nd Lieut. R. N. G. Atkinson, Gen. List; July 29th.

Flying Officers.—Capt. A. P. Mitchell, Middx. R. (T.F.), and to be sec'd.; Mar. 8th. 2nd Lieut. J. W. Bournemouth, Yeo. (T.F.), and to be sec'd.; Mar. 23rd. 2nd Lieut. (on prob.) G. G. A. Martin, S.R.; April 22nd. 2nd Lieut. H. R. S. Birkin, Notts and Derby R. (T.F.), and to be sec'd.; July 3rd. 2nd Lieut. W. F. de V. Bealey, N. Staff. R., S.R., and to be sec'd.; July 4th. Temp. 2nd Lieut. T. D. Cole, Gen. List; July 21st.

Temp. Lieut. C. Leven, A.S.C., and to be transf'd. to R.F.C., Gen. List; Temp. 2nd Lieut. G. T. Bickerton, Gen. List, from an Equipment Officer, 3rd Cl.; July 24th. Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: S. E. Stanley, E. B. Brodie, L. H. Sutton, F. E. Bond, R. A. Inglis, H. V. Young, I. D. Campbell; Temp. 2nd Lieut. J. M. Dowsett

R. Ir. Fus., and to be transf'd. to R.F.C., Gen. List. Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: G. D. Addison, H. D. Macpherson, R. K. Harrison, C. H. Williams, C. W. Hamilton, W. G. McRae; July 25th. Temp. 2nd Lieut. R. L. Crofton, North'd. Fus., and to be transf'd. to R.F.C., Gen. List; July 26th. Temp. 2nd Lieut. (on prob.) A. W. Rush, Gen. List, and to be confirmed in his rank; Temp. Lieut. E. L. Burrell, Gen. List, from a Flying Officer (Ob.), seniority Oct. 19th. Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: J. Wynn, C. McK. Payne, and H. W. Westaway; July 28th.

The appointment of 2nd Lieut. A. G. V. Taylor, Ind. Inf., notified in the Gazette of July 13th, is antedated to April 25th.

Flying Officers (Observers).—Lieut. H. C. E. Cherry, Glouc. R. (T.F.), seniority May 4th; 2nd Lieut. J. L. Richardson, Glouc. R. (T.F.), seniority May 12th, and to be sec'd.; Temp. 2nd Lieut. L. A. Colbert, Sco. Rif., seniority May 23rd, and to be transf'd. to R.F.C., Gen. List; Temp. Lieut. F. Shingleton, A.S.C., seniority May 26th, and to be transf'd. to R.F.C., Gen. List; 2nd Lieut. S. S. Jones, M.C., S. Lan. R., S.R., seniority June 26th, and to be sec'd.; Temp. Lieut. A. Calder, Oxf. and Bucks. L.I., seniority July 16th, and to be transf'd. to R.F.C., Gen. List; July 27th.

Assistant Instructor in Gunnery (graded as Equipment Officer, 3rd Class).—Temp. 2nd Lieut. D. R. Mitchell, R. Suss. R., and to be transf'd. to R.F.C., Gen. List; July 22nd.

Balloon Commander (graded as a Balloon Officer).—2nd Lieut. C. McM. Russell, S.R., from a Balloon Officer, and to be Temp. Lieut. whilst so employed; July 28th.

General List.—Flight-Sergt. T. D. Cole, from R.F.C., to be Temp. 2nd Lieut.; July 21st. The following to be Temp. 2nd Lieuts. (on prob.): A. Davies; July 16th. P. J. Rennert, late Lieut., S. Afr. Inf.; July 31st.

Supplementary to Regular Corps.—2nd Lieut. H. H. Bright is cashiered by sentence of a General Court-Martial; July 19th.

General List (R.F.C.).—Cadet W. Simmonds to be Temp. 2nd Lieut. (on prob.); July 10th (substituted for Gazette notification, July 30th, page 7,783, incorrectly specifying date as July 12th).

London Gazette Supplement, August 15th.

The following appointments are made:—

Squadron Commander.—Capt. A. G. R. Garrod, M.C., Leic. R., S.R., from a Flight-Comdr., and to be Temp. Major whilst so employed; Aug. 5th.

Flying Officers.—Temp. 2nd Lieut. H. M. S. Pillow, attd. Middx. R., and to be transf'd. to the Gen. List; June 28th. Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: H. E. W. McAndrew; July 23rd. 2nd Lieut. C. E. Howell, S.R.; July 25th. Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: F. B. G. Castleman, D. W. Winter, A. B. E. Graham; July 26th.

Equipment Officers, 1st Class.—Temp. 2nd Lieut. (on prob.) H. Marsh, Gen. List, to be Temp. Capt. whilst so employed, and to be confirmed in his rank; July 16th. 2nd Lieut. (Temp. Lieut.) E. L. P. Morgan, S.R., from the 2nd Cl., and to be Temp. Capt. whilst so employed; Aug. 1st.

2nd Class.—2nd Lieut. J. Rigby, from 3rd Cl., and to be Temp. Lieut. whilst so employed; May 20th.

3rd Class.—Temp. Qr.-Mr. and Hon. Lieut. C. S. Burdon, Middx. R.; May 3rd. Temp. 2nd Lieut. R. W. Hodges, Gen. List; July 5th. Temp. Hon. Lieut. P. R. Callard, and to be transf'd. to the Gen. List as Temp. Lieut.; July 11th.

General List.—R. W. Hodges, late Capt., Ind. Army Res. of Off., to be Temp. 2nd Lieut.; May 31st. The following to be Temp. 2nd Lieuts. (on prob.): W. White; July 27th. P. D. Stonham; Aug. 1st. A. O. Fuller; Aug. 4th.

London Gazette Supplement, August 16th.

The following to be Temp. 2nd Lieuts.:

For duty with R.F.C.: Sergt. H. S. Starling, from R.F.C.; June 25th. The name of Sergt. T. W. Maughan is as now described, and not as in the Gazette of May 11th.

The following appointments are made:—

Squadron Commanders.—From Flight-Comdrs. and to be Temp. Majors whilst so employed: 2nd Lieut. (Temp. Capt.) A. M. Vaucour, M.C., R.A.; May 1st. Capt. C. E. Bryant, D.S.O., Hrs.; July 9th.

Flying Officers.—Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: P. H. Raney; July 21st. P. R. Dawson; July 24th. Lieut. W. F. Annis, Can. Inf.; July 25th. T. D. Macintosh and R. G. Frith; July 26th.

Flying Officers (Observers).—July 24th: Temp. Lieut. B. Mason, York. L.I., seniority Jan. 29th, and to be transf'd. to R.F.C., Gen. List; 2nd Lieut. V. R. S. White, M.C., S. Staff. R., S.R., seniority April 28th and to be sec'd.; Lieut. H. W. Rick, Can. Gen. List; July 25th, seniority May 10th. Capt. C. B. Dick-Cleland, New Zealand A.S.C.; July 24th, seniority May 14th. Lieut. G. A. Brooke, S. Staff. R., S.R., from M.G. Corps; July 25th, seniority June 18th.

Balloon Officers.—Temp. Lieut. W. E. Hazelton, W. York. R., and to be transf'd. to R.F.C., Gen. List; May 22nd, 1916. Temp. 2nd Lieut. (on prob.) A. W. Scott, Gen. List, and to be confirmed in his rank; May 30th.

Adjutants.—And to be Temp. Capts. (without the pay or allowances of that rank) whilst so employed: Lieut. W. A. Knox, Can. Art.; 2nd Lieut. M. A. Seymour, S.R., from a Flying Officer; July 1st.

Equipment Officers, 1st Class.—From the 2nd Cl., and to be Temp. Capts. whilst so employed: Lieut. J. W. Yuile, Can. Inf.; Temp. Lieut. H. B. Denton, Gen. List; Lieut. B. V. Grealy, S.R.; 2nd Lieut. (Temp. Lieut.) H. E. Earl, Rif. Brig., S.R., from an Asst. Instr. (graded as an Equipment Officer, 2nd Cl.), School of Mil. Aeronautics, and to be Temp. Capt. whilst so employed; July 1st.

2nd Class.—Lieut. F. W. Roberts, S.R., from 3rd Cl.; July 1st. From the 3rd Cl., and to be Temp. Lieuts. whilst so employed: Temp. 2nd Lieut. H. B. Dell, Gen. List; 2nd Lieut. S. A. Mitchell, S.R.; Temp. 2nd Lieut. (on prob.) W. Gawkrödger, Gen. List, to be confirmed in his rank and to be Temp. Lieut. whilst so employed; July 16th.

3rd Class.—Temp. 2nd Lieuts. (on prob.), Gen. List, and to be confirmed in their rank: B. C. Akehurst; July 16th. A. O. Fuller; Aug. 5th.

General List.—The following from R.F.C., to be Temp. 2nd Lieuts.: 1st Cl. Air-Mech. N. B. Arbutnot, 1st Cl. Air-Mech. W. A. Golding, 2nd Cl. Air-Mech. H. Sinclair, 1st Cl. Air-Mech. C. F. Straughan; May 17th. 3rd Cl. Air-Mech. S. J. Dodson, from R.F.C., to be Temp. 2nd Lieut. (on prob.); July 30th.

General List (R.F.C.).—The following Cadets to be Temp. 2nd Lieuts. (on prob.): J. Allan, A. P. Atkins, F. R. Bolton, K. L. Boswell, W. K. Bradley, C. J. Clark, G. I. Griffiths, H. W. Heywood, E. J. D. Hoare, J. I. T. Jones, N. H. Muir, A. L. Paxton, E. F. Peacock, T. A. P. Proctor, A. H. Read,

S. L. Russell, C. B. Seymour, H. Steed, A. E. Walsh; Aug. 2nd. F. J. P. Disney, V. H. C. Gayford and J. A. Shearer; Aug. 7th.

London Gazette Supplement, August 17th.

The following appointments are made:—

Squadron Commanders.—From Flight-Comdrs., and to be Temp. Majors whilst so employed: Temp. Capt. F. M. Ballard, Gen. List; Mar. 16th. 2nd Lieut. (Temp. Capt.) A. K. Tylee, S.R.; Mar. 21st. 2nd Lieut. (Temp. Capt. G. H. Bonnell, R.F.A., S.R.; April 24th. Lieut. (Temp. Capt.) J. S. Scott, M.C., Can. Art.; June 18th. Capt. J. R. McCrindle, M.C., Gord. Highrs. (T.F.); Aug. 1st.

Capt. A. M. Wilkinson, D.S.O., Hamps. R. (T.F.), from a Flight-Comdr., and to be Temp. Major whilst so employed; May 10th (substituted for the notification in the *Gazette* of July 20th).

The following Majors (Temp. Lieut.-Cols.) revert from Wing Comdrs., and relinquish their temp. rank: G. B. Stopford, R.A.; July 30th, seniority Sept. 5th, 1915. F. J. L. Cogan, R.A.; Aug. 4th, seniority July 12th, 1915.

Flying Officers.—From Flying Officers, and to be Temp. Capt. whilst so employed: 2nd Lieut. (Temp. Lieut.) N. Howarth, R. Lan. R., S.R.; July 1st. Temp. Lieut. L. F. Jenkin, Gen. List; July 31st. Lieut. C. J. Orde, A.S.C., S.R.; Aug. 1st. Lieut. A. P. D. Hill, R.A.; Aug. 4th. 2nd Lieut. F. H. Holdsworth, S.R.; Aug. 5th.

Capt. (Temp. Major) P. E. L. Gethin, S.R., reverts from Sqdn. Comdr., and relinquishes his temp. rank; July 27th, seniority Feb. 10th, 1916.

Flying Officers.—Temp. 2nd Lieut. (on prob.) F. E. White, Gen. List, and to be confirmed in his rank; July 24th. 2nd Lieut. S. Armstrong, R.A., and to be confirmed in his rank; Lieut. J. E. Pugh, Can. Gen. List; July 26th. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: F. H. Hiscock; July 26th. C. P. Adamson, O. E. J. McOustra, E. Taylor; Lieut. E. J. McLoughlin, Gen. List, from a Flying Officer (Ob.), seniority Aug. 10th, 1916; Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: W. H. Jackson, A. H. Rice; July 27th. 2nd Lieut. D. Francis, Leic. R. (T.F.), and to be confirmed; Lieut. K. W. Junor, Can. M.C. Corps; Temp. 2nd Lieut. F. G. Ibbett, Gen. List, from a Flying Officer (Ob.), seniority May 18th, 1916; Temp. 2nd Lieut. (on prob.) G. R. Baynton, Gen. List, and to be confirmed in his rank; 2nd Lieut. D. G. P. Clark, Ches. R., and to be confirmed; Temp. 2nd Lieut. (on prob.) L. F. Clark, Gen. List, and to be confirmed in his rank; Lieut. D. S. Milligan, Can. Inf.; Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: A. J. Bateman, E. D. S. Groome, L. G. B. Spence; Temp. Capt. R. S. Witchell, Gen. List, from an Equipment Officer, 1st Cl. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: W. E. Goodyear, L. de G. Godet, J. G. Kingsbury, J. K. Watson, J. A. Aldridge, G. D. Jooste, A. L. Cuffe, T. A. Ford, D. W. Lane; July 28th. R. S. Durno, C. S. Gilson, E. S. R. Lennard, G. J. Cooper; July 29th.

Flying Officers (Observers).—Lieut. B. A. Wilson, Can. Inf.; May 6th, seniority April 14th (substituted for the notification in the *Gazette* of June 21st). 2nd Lieut. A. L. Taylor, A.S.C. (T.F.), seniority Feb. 25th, and to be confirmed; 2nd Lieut. (Temp. Lieut.) W. H. Swinford, R.F.A. (T.F.), seniority Mar. 16th, and to be confirmed; Temp. 2nd Lieut. E. Wilson, Middx. R., seniority Mar. 28th, and to be confirmed; R.F.C., Gen. List; Temp. Lieut. K. C. Leslie, Gen. List, seniority April 7th; 2nd Lieut. W. Henderson, Gord. Highrs., seniority April 7th, and to be confirmed; 2nd Lieut. E. J. Off. Ross, Middx. R., S.R., seniority April 10th, and to be confirmed; Temp. 2nd Lieut. J. W. Ross, Sea. Highrs., seniority April 15th, and to be confirmed; R.F.C., Gen. List; Temp. Lieut. F. S. Harricks, A.S.C., seniority April 22nd, and to be confirmed; R.F.C., Gen. List; 2nd Lieut. W. X. Ganz, R. W. Fus., S.R., seniority April 25th, and to be confirmed; Temp. 2nd Lieut. S. W. Cowper-Coles, A.S.C., seniority May 18th, and to be confirmed; R.F.C., Gen. List; Lieut. W. R. Cooke, Can. M.C. Corps, seniority June 10th; Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: A. E. Cambridge, P. J. Casey; July 29th, seniority May 17th. Temp. 2nd Lieut. H. G. D. Erickson, R.W. Surr. R., seniority April 15th, 1916, and to be confirmed; R.F.C., Gen. List; Capt. E. Burrows, Linc. R. (T.F.), seniority Feb. 10th, and to be confirmed; Temp. 2nd Lieut. L. Collier, Som. L.I., seniority May 10th; July 31st. The initials of Lieut. M. W. Richardson, Can. Inf., are as now described, and not as in the *Gazette* of June 30th.

Instructor in Gunnery (graded as an Equipment Officer, 1st Class).—Temp. 2nd Lieut. (Temp. Lieut.) J. C. C. Affleck, Gen. List, from an Asst. Instr. in Gunnery (graded as an Equipment Officer, 2nd Cl.), and to be Temp. Capt. whilst so employed; July 1st.

Balloon Company Commander (graded as a Flight-Comdr.).—Lieut. (Temp. Capt.) R. C. Talbot, R.F.A. (T.F.), from a Balloon Comdr. (graded as a Balloon Officer); July 10th.

Balloon Officers.—Temp. 2nd Lieut. H. W. Armstrong, Gen. List, from an Equipment Officer, 3rd Cl.; May 21st. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: R. C. C. Mitchell, V. T. Boulger; May 30th. J. Powell, G. Wraps; June 15th. H. E. Eaton; June 27th. Temp. Capt. F. T. R. Kempster, A.S.C., and to be confirmed; R.F.C., Gen. List; July 1st. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: A. H. Dempster, S. W. Mountain; July 11th. Lieut. D. W. Meredith, R.F.A. (T.F.); July 25th.

Depot Commander.—Capt. (Temp. Major) M. D. Methven, Lond. R. (T.F.), from a Park Comdr., and to be Temp. Lieut.-Col. whilst so employed; July 1st.

Park Commanders.—From Equipment Officers, 1st Cl., and to be Temp. Majors whilst so employed: Temp. Capt. T. F. G. Strubell, Gen. List; 2nd Lieut. (Temp. Capt.) C. R. Huggins, S.R.; July 1st.

Special Appointment (graded as a Park Commander).—2nd Lieut. (Temp. Capt.) W. R. Wills, Ind. Army. Res. of Officers, from an Equipment Officer, 1st Cl., and to be Temp. Major whilst so employed; July 16th.

Equipment Officers, 1st Class.—2nd Lieut. (Temp. Lieut.) B. F. Crane, S.R., from the 2nd Cl., and to be Temp. Capt. whilst so employed; May 1st.

2nd Class.—2nd Lieut. (Temp. Lieut.) C. I. Burrell, R.E. (T.F.), from a Flying Officer; Mar. 10th. From the 3rd Cl., and to be Temp. Lieut. whilst so employed: 2nd Lieut. W. H. Farnell, S.R.; May 1st. 2nd Lieut. H. W. Robinson, S.R.; July 11th.

3rd Class.—Temp. 2nd Lieut. R. C. J. Hervey, R. Fus., and to be confirmed; R.F.C., Gen. List; 2nd Lieut. E. Hiscock; June 30th.

General List.—The following to be Temp. 2nd Lieut. (on prob.): F. Hickman; June 20th. G. F. Kite; June 20th. C. F. King; July 27th; F. C. Pratt; July 30th.

Temp. 2nd Lieut. H. S. Hawkes, Gen. List, to be Temp. Lieut. whilst employed with R.F.C.; Aug. 1st.

Supplementary to Regular Corps.—The following relinquish their commissions on account of physical unsuitability as a pilot or observer: 2nd Lieut. W. F. Dobson, 2nd Lieut. (on prob.) O. E. Seymour; Aug. 18th. 2nd Lieut. F. C. Biette resigns his commission on account of physical unsuitability as a pilot or observer, and is granted the hon. rank of 2nd Lieut.; Aug. 18th. 2nd Lieut. (on prob.) E. J. Watson resigns his commission; Aug. 18th.

London Gazette Supplement, August 18th.

The following appointments are made:—

Flight-Commanders.—Temp. Lieut. E. H. Tatton, Gen. List, from a Flying Officer, and to be Temp. Capt. whilst so employed; Aug. 1st. Capt. (Temp. Major) R. M. Vaughan, M.C., R. Innis. Fus., reverts from a Sqdn. Comdr., and relinquishes his temp. rank; Aug. 4th, seniority Mar. 28th, 1915.

Flying Officers.—2nd Lieut. (on prob.) J. Rimmer, S.R.; Jan. 8th. Temp. 2nd Lieut. A. F. Ingram, A. Cyclist Corps, and to be confirmed; R.F.C., Gen. List; July 4th. Temp. 2nd Lieut. R. H. Horwood, Yorks. L.I., and to be confirmed; R.F.C., Gen. List. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: F. A. Martin; July 25th. W. L. Boness, W. G. Kewley; July 26th.

Capt. H. H. Bagnall, Middx. R. (T.F.), from a Flying Officer (Ob.), seniority Jan. 2nd, 1916; July 27th. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: H. Morris, G. L. Platts, L. J. Boswood, C. H. Strong, W. L. McIlwraith, G. N. Traunweiser. 2nd Lieut. (Temp. Lieut.) H. M. Golding, Glouc. R., S.R., from a Flying Officer (Ob.), seniority Aug. 9th, 1916; Temp. 2nd Lieut. (on prob.) G. H. Gallinger, Gen. List, and to be confirmed in his rank; Capt. W. L. Pittendrigh, Lpool. R. (T.F.), and to be confirmed; Temp. 2nd Lieut. (on prob.) H. S. H. Read, Gen. List, and to be confirmed in his rank; July 28th. Temp. 2nd Lieut. H. A. Blundell, Bedf. Training Depot, and to be confirmed; R.F.C., Gen. List; Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: J. W. Jackson, J. A. Spilhaus; July 29th. H. E. Seanson, L. G. Humphries; July 30th. 2nd Lieut. N. W. Goodwin, Middx. R., and to be confirmed; Temp. 2nd Lieut. (on prob.) D. H. Jones, Gen. List, and to be confirmed in his rank; Lieut. S. D. Morrison, Can. Gen. List; 2nd Lieut. W. G. C. Hackman, Hamps. R., and to be confirmed; Temp. 2nd Lieut. (on prob.) A. M. Chatterton, Gen. List, and to be confirmed in his rank.

Flying Officer (Observer).—2nd Lieut. S. E. Raper, Sea. Highrs. (T.F.), and to be confirmed; Aug. 1st, seniority April 22nd.

Assistant Instructors in Gunnery (graded as Equipment Officers, 2nd Class).—Capt. R. T. Neville, Bedf. R., from M.G. Corps; Temp. 2nd Lieut. W. G. Barry, Gen. List, from an Asst. Instr. in Gunnery (graded as an Equipment Officer, 3rd Cl.), and to be Temp. Lieut. whilst so employed; Temp. Capt. G. Dixon-Spain, M.C., Gen. List, from a Flying Officer (Ob.), July 30th; July 21st (graded as Equipment Officers, 3rd Class).—Temp. 2nd Lieut. (on prob.) W. B. Barry, Gen. List, and to be confirmed in his rank; July 2nd. Temp. 2nd Lieut. G. H. Crick, R. Sc. Fus.; July 28th.

Depot Commander.—Capt. (Temp. Major) H. Burchall, S.R., from a Park Comdr., and to be Temp. Lieut.-Col. whilst so employed; June 1st.

Park Commanders.—From Equipment Officers, 1st Cl., and to be Temp. Majors whilst so employed: Lieut. (Temp. Capt.) S. S. Nevill, S.R.; July 5th. Lieut. (Temp. Capt.) H. F. T. Blowey, R.A.; Temp. Capt. E. R. Bond, Gen. List; Temp. Capt. R. C. Lane, Gen. List; Aug. 1st.

Equipment Officers, 2nd Class.—From the 3rd Cl., and to be Temp. Lieut. whilst so employed:—Sec. Lieuts. S.R., R. A. Hassard, S. J. Vine, July 1st; R. W. Mitchell, A. Graham, July 27th.

3rd Class.—Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: R. D. Wakeham, W. Blackwell; Aug. 1st.

General List (R.F.C.).—The following Temp. 2nd Lieut. (on prob.) are confirmed in their rank: C. A. Bainbridge, N. H. Crow, W. P. Delamere, F. W. Gibbes, H. S. Graves, W. Hurst-Barnes, C. T. Lovell, J. C. Lowenstein, L. N. Mitchell, P. C. Norton, E. E. Turner, G. S. Wood. Cadet L. L. Stephens to be Temp. 2nd Lieut. (on prob.); Mar. 17th (substituted for *Gazette* notification, April 10th, incorrectly describing name as Stevens) (since accidentally killed).

London Gazette, August 20th.

The following appointments are made:—

Squadron Commanders.—From Flight-Comdrs., and to be Temp. Majors whilst so employed: Lieut. (Temp. Capt.) G. G. A. Williams, D. Gds., S.R.; May 10th. 2nd Lieut. (Temp. Capt.) R. J. Hudson, M.C., R. Fus., S.R.; Aug. 4th.

Special Appointment (graded as a Squadron Commander).—Capt. (Temp. Major) E. W. Powell, Unatt'd. List (T.F.), from a Sqdn. Comdr. and to retain his temp. rank whilst so employed; Aug. 6th.

Flying Officers.—Temp. 2nd Lieut. S. E. Adams, Gen. List, from a Flying Officer, and to be Temp. Capt. whilst so employed; April 17th. Temp. Hon. Lieut. M. Nares, Gen. List, from an Asst. Insp., Aeronautical Inspect. Dept., and to be Temp. Capt. whilst so employed; Aug. 1st. Temp. Lieut. (Temp. Major) S. G. Gilmour, Gen. List, to revert from Sqdn. Comdr., to relinquish his temp. rank and to be Temp. Capt. whilst so employed; Aug. 4th, seniority Jan. 8th, 1916.

Flying Officers.—Temp. 2nd Lieut. (Temp. Lieut.) N. O. Vinter, Gen. List, July 5th. Temp. 2nd Lieut. (on prob.) Gen. List, and to be confirmed in their rank: C. L. Stubbs; July 23rd. V. C. E. Bracey, F. E. Winsor; July 27th.

Temp. 2nd Lieut. H. G. Downing, Gen. List, from a Flying Officer (Ob.); July 28th, seniority Dec. 2nd, 1916. Temp. 2nd Lieut. (on prob.) A. W. Beauchamp Proctor, Gen. List, and to be confirmed in his rank; July 29th.

Balloon Company Commanders (graded as a Squadron Commander).—Lieut. (Temp. Capt.) J. R. Bedwell, R.G.A. (T.F.), from a Balloon Co. Comdr. (graded as a Flight-Comdr.), and to be Temp. Major whilst so employed; Aug. 5th. Graded as a Flight-Comdr.—2nd Lieut. (Temp. Lieut.) C. M. Down, Herts. R. (T.F.), from a Balloon Comdr. (graded as a Balloon Officer), and to be Temp. Capt. whilst so employed; Aug. 5th.

Balloon Commanders (graded as Balloon Officers).—From Balloon Officers: Capt. N. R. Mossop, Sufi. R., S.R.; July 10th. Capt. R. M. A. Edlundh, Lond. R. (T.F.); July 17th. Lieut. W. R. Phillips, Lond. R. (T.F.); July 24th. 2nd Lieut. C. T. S. Mendl, Devon R., S.R., and to be Temp. Lieut. whilst so employed; Temp. 2nd Lieut. W. J. H. Horrocks, Gen. List, and to be Temp. Lieut. whilst so employed; July 30th. Temp. Lieut. O. L. Owen, Gen. List; Temp. 2nd Lieut. S. Jennings, Gen. List, and to be Temp. Lieut. whilst so employed; July 31st.

Equipment Officers, 1st Class.—From the 2nd Cl., Aug. 1st: Capt. T. H. Vitty, R.E. (T.F.). And to be Temp. Capt. whilst so employed: 2nd Lieut. (Temp. Lieut.) G. E. Upton, S.R.; 2nd Lieut. (Temp. Lieut.) J. O. Ruscoe, S.R.; 2nd Lieut. (Temp. Lieut.) E. I. David, S.R.; 2nd Lieut. (Temp. Lieut.) B. M. Iles, S.R.; Temp. Lieut. P. R. Callard, Gen. List, from the 3rd Cl., and to be Temp. Capt. whilst so employed; Aug. 2nd. 2nd Lieut. (Temp. Lieut.) R. N. Vyvyan, S.R., from the 2nd Cl., and to be Temp. Capt. whilst so employed; Aug. 16th.

2nd Class.—From the 3rd Cl., and to be Temp. Lieut. whilst so employed: Temp. 2nd Lieut. R. J. Muxworthy, Gen. List; June 2nd. 2nd Lieut. R. E. Reid, S.R.; 2nd Lieut. H. Loeffler, S.R.; 2nd Lieut. A. T. Shaw, S.R.; and Lieut. F. H. Sanders, S.R.; 2nd Lieut. A. S. F. Morris, S.R.; Temp. 2nd Lieut. W. F. Merritt, Gen. List; 2nd Lieut. A. E. Squire, S.R.; 2nd Lieut. F. H. Tyas, S.R.; Temp. 2nd Lieut. T. J. Legate, Gen. List; Temp. 2nd Lieut. P. M. Brambleby, Gen. List; Aug. 1st. Temp. 2nd Lieut. W. W. Gibson, Gen. List; Aug. 7th. Lieut. B. O. Watts, S.R., from the 3rd Cl.; Aug. 16th.

3rd Class.—Temp. 2nd Lieut. H. Lawson, Gen. List; June 22nd.

General List.—Sergt.-Major H. Lawson, from R.F.C., to be Temp. 2nd Lieut.; June 22nd. Sergt. H. G. Eggar, from R.F.C., to be Temp. 2nd Lieut. (on prob.); Aug. 18th.

Central Flying School.

Instructors.—2nd Lieut. (Temp. Capt.) A. M. Vaucour, M.C., R.A., a Flight-Comdr., vice Capt. C. G. Bell, S.R.; Jan. 23rd. Temp. Lieut. (Temp. Capt.) (2nd Lieut., Res. of Officers) Lord G. H. L. Dundas, Gen. List, a Flight-Comdr., vice Lieut. (Temp. Capt.) D. A. L. Davidson, M.C., S.R.; Feb. 11th. Temp. Capt. H. Barker, Gen. List, a Flight-Comdr., vice 2nd Lieut. (Temp. Major) L. A. Tilney, R.H. Gds.; Mar. 15th. Capt. G. Allen, Conn. Rang., a Flight-Comdr., vice 2nd Lieut. (Temp. Capt.) T. Davidson, Cam'n. Highrs. (T.F.);

May 1st. 2nd Lieut. (Temp. Capt.) A. H. O'H. Wood, S.R., a Flight Comdr., vice Capt. (Temp. Major) F. G. Small, Conn. Rang.; May 4th. Lieut. (Temp. Major) R. Balcombe-Brown, M.C., R.F.A., S.R., a Sqdn. Comdr., vice Temp. Capt. H. Barker, Gen. List; June 17th. Capt. R. H. Freeman, M.C., Worc. R., S.R., a Flight-Comdr., in succession to 2nd Lieut. (Temp. Capt.) A. H. O'H. Wood, S.R.; July 8th. Graded as an Equipment Officer, 1st Class.—2nd Lieut. (Temp. Lieut.) S. McClure, N. Staff. R., S.R., from an Asst. Instr. (graded as an Equipment Officer, 2nd Cl.), and to be Temp. Capt. whilst so employed; July 28th.

Assistant Instructor (graded as an Equipment Officer, 2nd Class).—Temp. Qr.-Mr. and Hon. Lieut. H. C. Gaze, R. Fus., from an Equipment Officer, 3rd Cl., and to be Temp. Lieut. whilst so employed; July 28th.

Officer in Charge of Workshops.—2nd Lieut. (Temp. Capt.) E. L. P. Morgan, S.R., an Equipment Officer, 1st Cl.; Aug. 1st.

Schools of Military Aeronautics.

Assistant Commandant (Staff Officer, 2nd Class, graded as a Brigade Major).—Major P. E. L. Elgee, R. Berks. R., vice Temp. Capt. F. A. Forde, Gen. List; July 19th.

Memorandum.—Lieut. (Temp. Capt.) C. A. Hooper, S.R., to be Temp. Major (without the pay or allowances of that rank) whilst comdg. an Aircraft Acceptance Park; July 2nd.

Supplementary to Regular Corps.—The following 2nd Lieuts. to be Lieuts.: G. C. Husband, G. P. Alexander; July 1st. T. A. B. Rolfe; Aug. 1st.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

General Headquarters, August 1st.
"Yesterday, in spite of weather which made flying almost impossible, our aeroplanes kept contact with our advancing infantry throughout the day. The enemy's aerodromes, transport and infantry were also successfully attacked with bombs and machine-gun fire. The few enemy machines that attempted to fly were attacked, and six of them were brought down. Three of our machines are missing."

War Office, August 2nd.
"Salonica.—Our aeroplanes have bombed hostile camps and dumps at various points north of Seres, between Lake Butkova and the Rupel Pass and east of Petric."

General Headquarters, August 6th.
"Yesterday, after several days of inactivity due to unfavourable weather, our aeroplanes were again able to carry out successful bombing raids and other work. In air fighting five German aeroplanes were brought down, one of which was forced to land behind our lines, and three others were driven down out of control. One of our machines is missing."

General Headquarters, August 8th.
"Yesterday, in spite of continuous mist and clouds, our aeroplanes bombed the enemy's railway tracks, sidings, and trains, 40 miles behind the German lines, causing much damage, and, in particular, derailing one train and blowing up another."

Bombs were also dropped during the previous night on an enemy's ammunition depot.

"One of our machines is missing."

General Headquarters, August 9th.
"Work in the air was continued yesterday, although bad weather again interfered greatly with flying. In air fighting two German aeroplanes were brought down, and one other was driven down out of control. None of our machines are missing."

General Headquarters, August 10th.
"There was great activity in the air yesterday on both sides, but a strong westerly wind and thick clouds made it difficult for our aeroplanes to engage the enemy's machines. Bombing and artillery work were carried out successfully during the day."

"In air fighting five German aeroplanes were brought down and five others were driven down out of control. In addition, two German observation balloons were brought down in flames, and four others were driven down badly damaged. Four of our aeroplanes are missing."

War Office, August 10th.
"Salonica.—On the night of August 4th-5th the aerodrome at Livunovo (in the Upper Struma valley, north-east of Petric) was successfully bombed by our aeroplanes."

Admiralty, August 11th.
"Several tons of bombs were dropped by the R.N.A.S. during the night of August 9th-10th on the following military objectives: Ghistel Aerodrome, Zuidwege railway sidings, and Thourout railway junction. Dense clouds of smoke were caused at Zuidwege. The railway junction at Thourout was also attacked by gunfire from the air. Yesterday afternoon (August 10th) a further bombing raid was carried out on the aerodrome at Sparappelhoek. All machines returned safely."

General Headquarters, August 11th.
"Yesterday for the first time for over ten days a full day's flying was possible. Enemy aircraft showed great activity, crossing our lines in many places, attempting to prevent our artillery work and attacking our bombing machines. In spite of their efforts, a great deal of successful artillery observation work was carried out by us. A large number of photographs were taken, many targets on the ground were effectually engaged with machine-gun fire, and in the course of the day and night 6½ tons of bombs were dropped on the enemy's aerodromes, ammunition depôts, and other points of military importance."

"Fighting was very severe all day, the enemy being encountered in large formations. Ten German machines were brought down by our aeroplanes and five others were driven down out of control. Another enemy machine was driven down out of control by gunfire. Twelve of our machines are missing."

General Headquarters, August 12th.
"In spite of repeated storms and strong westerly winds, which greatly favoured the enemy, our aeroplanes carried out much successful work again yesterday. In air fighting three German machines were brought down and four others driven out of control. Two of our aeroplanes were forced to land behind the enemy's lines, and three other British machines are missing."

General Headquarters, August 13th.
"Our aeroplanes and balloons carried out a great deal of successful work yesterday, in conjunction with our artillery. Many photographs were taken by us, and four hostile aerodromes were heavily bombed during the day."

"Enemy aircraft were again particularly aggressive. In air fighting nine German aeroplanes were brought down, two of which fell within our lines, and eight other hostile machines were driven down out of control. Seven of our machines are missing."

General Headquarters, August 14th.
"The enemy's aircraft continued to pursue aggressive tactics yesterday, and attacked our long-distance bombing machines with great vigour. Our machines, none the less, reached and successfully bombed their objectives in every case. Artillery and photographic work was carried out throughout the day by our machines, and machine-gun fire was opened with effect upon the enemy's infantry, both in their trenches and in the open. In air fighting seven German aeroplanes were brought down and four others were driven down out of control. Two of our machines are missing."

General Headquarters, August 15th.
"There was great activity in the air again yesterday, and severe fighting took place, in the course of which nine German aeroplanes were brought down and five others driven down out of control. Seven of our aeroplanes are missing, two of which were overtaken by a violent storm when working over the enemy's lines."

War Office, August 15th.

"Salonica.—Our aeroplanes have bombed the aerodromes at Livunovo (north-east of Petric), Drama and Gereviz (south-east of Xanthi), with good effect. All our machines returned safely."

General Headquarters, August 16th.

"Throughout yesterday's attack our aeroplanes co-operated successfully with our artillery and infantry, and assisted effectively with machine-gun fire in repelling the enemy's counter-attacks. In air fighting 11 German aeroplanes were brought down, and four others were driven down out of control. In addition, one hostile machine was brought down by our anti-aircraft guns. Three of our aeroplanes are missing. To-day also our aircraft have done excellent work."

General Headquarters, August 17th.

"There was great activity in the air yesterday, and fighting was severe. Although a strong west wind made it difficult for damaged machines to sever our side of the lines, our aeroplanes had greatly the better of the fighting and were able to carry out their tasks successfully, in spite of determined efforts on the part of hostile aircraft to interfere with their work. Our activities commenced before dawn, and were continued uninterruptedly throughout the day. Hostile aerodromes were cleared with machine-gun fire from a height of a few score feet, and a total of 6½ tons of bombs were dropped on the enemy's aerodromes, railway stations and billets. Other machines directly assisted our infantry in their attack, harassing the German infantry and gunners with machine-gun fire, and directing the fire of our artillery upon concentrations of German troops. Fifteen hostile machines were brought down by our aeroplanes, and 11 others were driven down out of control. One German observation balloon also was brought down in flames. Eleven of our aeroplanes are missing."

Admiralty, August 17th.

"A series of raids were successfully carried out yesterday (16th inst.) by the R.N.A.S. Many tons of bombs were dropped on the following military objectives: Ostend railway station and sidings; Thourout railway station and junction; Ghistel aerodrome. Several fires were observed. Attacks were also made by gunfire from the air on Engel and Uytkerke aerodromes, and on road transports. All machines returned safely."

Admiralty, August 18th.

"Another bombing raid was carried out at about midnight, 16th-17th, by the R.N.A.S. on the Thourout railway station and junction. Fires were caused, and it is thought that an ammunition dump was hit and the railway damaged. Many tons of bombs were dropped on objective. All machines returned safely."

General Headquarters, August 18th.

"The strong west wind yesterday again told against our aeroplanes, giving machines damaged in combat east of the line little chance of reaching their aerodromes. Bombing raids and the policy of harassing the enemy's infantry with machine-gun fire were actively continued by us. Observation for our artillery was carried out all day, and an unusually large number of photographs were taken. In air fighting 12 German aeroplanes were brought down and 18 driven down out of control. Twelve of our machines are missing, two of which collided during a fight and fell within the enemy's lines."

General Headquarters, August 19th.

"On the nights of the 16th and 17th inst. enemy aircraft bombed British casualty clearing stations. Ten wounded German prisoners were killed, and nine wounded German prisoners were again wounded by the German bombs."

"Strong westerly winds prevailed again yesterday. The activity of our aeroplanes was continued, and bombing raids and artillery and photographic work were carried out successfully throughout the day. In air fighting three German aeroplanes were brought down, and four others were driven down out of control. Eight of our machines are missing."

General Headquarters, August 20th.

"Yesterday hostile aircraft worked in large formation well behind their own lines and endeavoured without success to hinder the work of our bombing, photographic and reconnaissance machines. Our bombing operations were continued; an enemy train was wrecked, and much damage was caused to hostile aerodromes, dumps and stations."

"Work in co-operation with our artillery was carried out with good effect, and many photographs were taken. In air fighting two German aeroplanes were brought down and four others driven down out of control. One other enemy machine was shot down in our lines by anti-aircraft guns. Six of our machines are missing."

Admiralty, August 20th.

"Many tons of bombs were dropped during the night of 18th-19th by the R.N.A.S. on the following military objectives:—

"(a) St. Pierre Station and sidings, Ghent.

"(b) Thourout Station and dump.

"(c) Bruges Docks.

"A bombing raid was also carried out yesterday morning (Aug. 19th) on Snelleghem Aerodrome, where a direct hit was made on a large shed."

"On their return our machines were attacked by hostile aircraft, which were beaten off with the help of an R.F.C. patrol. One enemy machine was shot down out of control. All our machines returned safely."

French.

Paris, August 2nd.

"Between July 21st and 31st, 20 enemy aeroplanes and two kite balloons were brought down. During this same period 21 enemy aeroplanes were badly hit and fell in their own lines. Lieut. Marcel Hughes has so far brought down five German machines. During the above-mentioned period a dozen of our squadrons made numerous raids and bombarded, among other places, the railway stations of Roulers, Metz, Thionville, Montmédy, and Bétheniville, the Hagondange Works, the cantonnements and bivouacs in the Forest of Houthulst and Spincourt, and in the Valley of the Suipe, and munition dumps in the Laon district. About 40 tons of bombs were dropped in these raids, which caused much damage."

"Salonica.—Bombardments of enemy installations have been carried out by

British airmen in the Ghevgeli and Demirhisar zones and by French airmen to the north of Monastir and to the north of Koritza."

Paris, August 3rd.

"Salonica.—Allied airmen bombarded the enemy camps in the region of Demirhisar and that of Lake Malik."

Paris, August 4th.

"Salonica.—British aviators bombarded Yenikoi, twenty miles to the north of Petritch."

Paris, August 9th.

"In spite of the bad weather, which made their mission a particularly difficult one, our aerial squadrons carried out numerous raids and bombarded the aviation grounds of Colmar and Habsheim. All the objectives were hit."

"Salonica.—British airmen bombarded with success the aerodrome at Livanovo and the enemy depôts in the region of Seres and in that of Stojakovo."

Paris, August 11th.

"German aeroplanes last night bombarded the region of Nancy. There were no casualties and the material damage done was very slight."

"Two German aeroplanes were brought down by our pilots yesterday. Two other machines were forced to land in their lines seriously damaged. Our bombing machines carried out various operations. The aviation ground of Schlestadt and the hutments of the Houthulst Forest were lavishly bombed."

"Salonica.—The British Air Service bombarded enemy hangars near Drama."

Paris, August 12th.

"As a reprisal for the bombardment carried out by the Germans against Nancy and the region north of Paris, two of our aeroplanes, piloted by Lieut. Mezergues and 2nd Lieut. Baumont, bombarded yesterday the town of Frankfurt-on-Main. Both machines returned unharmed."

"It is confirmed that a German aeroplane was brought down on August 9th in aerial combat on the Belgian front. Yesterday an enemy machine was brought down by our machine-gun fire north-east of Vauxaillon."

Paris, August 16th.

"Salonica.—Twenty-three French and five Italian aeroplanes have bombed the enemy camps in the region of Pogradec (south of Lake Ochrida), while British airmen bombed the depôts in the region of Seres (Struma front)."

Paris, August 17th.

"Our aeroplanes took an active part in the operation on the Belgian front. They fought fresh battles with the enemy's aircraft, two of which were brought down and two forced to land in their own lines. In addition, our machines successfully attacked with bomb and machine-gun fire from the air at a very low altitude enemy troops, trains and aviation grounds."

Paris, August 18th.

"During the day of Aug. 17th and the night of Aug. 17th-18th our bombarding aeroplanes carried out many flights over the enemy's lines. One hundred and eleven of our machines took part in various flights, in course of which 13,000 kilogrammes (13 tons) of projectiles were dropped on the enemy's establishments. Two of our machines have not returned. The aviation grounds of Colmar, Frescati and Habsheim, the aviation camp in the region of Chambley, the railway stations of Freiburg in Breisgau, Longuyon, Montmedy, Pierrepont, St. Juvin, Grand Pré, Challerange and Dun-sur-Meuse, &c., and the bivouacs of the Spincourt Forest were copiously pelted with projectiles. Many explosions on the objectives were observed, and several fires broke out. During the night of Aug. 16th-17th the railway station of Cortemarck was also visited by our aircraft. A violent fire broke out in the railway station buildings. During the day yesterday seven German aeroplanes and a captive balloon were brought down by our pilots, and eight other enemy machines fell in their lines gravely damaged."

Paris, August 19th.

"Our chasing aeroplanes were particularly active yesterday (18th). Eleven German machines fell in flames or were completely destroyed as the result of air engagements with our pilots. In addition, six enemy machines were forced to land in their own lines, seriously damaged."

"During the night of the 17th-18th and in the daytime yesterday (18th) our aeroplanes bombarded the railway stations of Cortemarck, Thourout, Lichtervelde, Ostend and Cambrai; the hutments in the forest of Houtjult, the railway stations of Dun-sur-Meuse, and the munition dumps at Bantheville. Fire broke out in the Cambrai station and in an establishment."

Belgian.

Havre, August 14th.

"In spite of the unfavourable atmospheric conditions reigning yesterday, our artillery, energetically directed by our airmen, carried out successful destructive fire against the enemy artillery, which replied by shelling certain parts of our trenches and lines of communication in the Ramsappelle region with gas shells. In spite of the barrages put up by enemy squadrons, our airmen went up on photographic distance flights behind the German positions. During the night the enemy shelled our lines of communication."

Italian.

Rome, July 31st.

"This morning an enemy machine was brought down in flames near Podgora."

Rome, August 3rd.

"Above Tolmino one of our airmen brought down one enemy machine in flames and obliged another to land in its own lines, where it was afterwards destroyed by our artillery. Last night our large flights effectively bombed the arsenal and military works of Pola, all returning safely to their bases. Enemy machines carried out a bombing raid on some inhabited localities on the Lower Isonzo, causing a few casualties and doing slight damage."

Rome, August 4th.

"During the air fights of the 2nd inst. a third enemy machine was brought down beside the two already reported. Last night our flights renewed the bombardment of the arsenal and military works of Pola. Favoured by the slight fog, which hindered the work of the enemy searchlights and anti-air guns, our machines dropped bombs with accuracy on the objectives, causing great destruction and big fires, which they were able to observe before returning safely to their bases."

Rome, August 5th.

"During the night of the 4th enemy aircraft carried bombing raids on various inhabited centres on the plain between the Isonzo and the Tagliamento, but there were no casualties, and only slight damage was done. An enemy seaplane was brought down by our anti-aircraft guns and fell in the River Po, near Ponte Lagoscuro, the airmen being made prisoners."

Rome, August 8th.

"On the 6th inst. and yesterday our bombing flights, notwithstanding heavy anti-aircraft fire, dropped 4 tons of high explosives on the enemy's military hutments in Chiapovano valley (north-east of Gorizia), causing great destruction. One of the escorting planes was hit by enemy fire, but succeeded in landing within our lines. All the other machines returned safely to their bases."

Rome, August 9th.

"In the morning our flights, persevering in the operation begun on the 6th inst., raided Chiapovano Valley, causing, by dropping numerous bombs, new destruction and fires in the military establishments of this locality. The heavy defensive fire reached the machines and hit some of them, but our gallant airmen were able to bring them all back to their bases."

Rome, August 10th.

"On the night of August 8th-9th some large flights of our bombing planes renewed the attack on the military establishment of Pola. Favoured by a good light, our airmen effectively bombed the arsenal and the enemy fleet at anchor, which was clearly visible, by dropping 8 tons of high explosives on them."

"After having escaped the heavy anti-aircraft fire and repulsed the enemy seaplanes risen to oppose them, all our machines returned to their bases."

Rome, August 11th.

"During the evening our flights, strongly escorted, bombarded the enemy's military works in Chiapovano Valley by dropping three tons of high explosive. The intense anti-aircraft fire was ineffectual, and the numerous hostile chasing planes, strongly attacked by our machines, had to withdraw. One was seen to land in the direction of Planina (east of Mount Nero)."

"On the 8th inst. an enemy aeroplane, after a brisk fight with one of our chasing machines, was forced to land near Tolmino (Isonzo). Another was brought down yesterday in our lines west of Flondar (Carso). The airmen were made prisoners."

Rome, August 14th.

"In a combined action numerous batteries and a large flight bombarded on the afternoon of the 13th inst. the enemy's military works at Modrea and Modreje (south of Tolmino), damaging them severely and partly setting them on fire."

Rome, August 15th.

"Yesterday morning one of our large bombardment flights, strongly escorted, reached the important railway centre at Assling, in Sava Valley (south-east of Villach), with the object of damaging it and interrupting the intense traffic of the enemy there. A second flight, not less powerful than the first, repeated the operation in the afternoon, having as its objective the steel works situated in the same locality. The results which it was possible to observe proved very satisfactory. Explosive bombs of medium and large size, and also incendiary bombs, were dropped, 6½ tons in all, and direct hits were obtained on some works, while other buildings, including the railway station, were set on fire."

"All our aeroplanes, after having carried out this most daring operation, which was the more difficult on account of the distance to the centre bombarded, returned to their bases safely, passing through the screen of the enemy's fire, and repulsing, in brisk air duels, the numerous enemy machines risen to oppose them."

Rome, August 17th.

"Yesterday afternoon one of our flights effectively bombed enemy encampments and military assembly centres east of Comen. All the aeroplanes returned safely to their bases."

Rome, August 18th.

"In the morning one of our bombardment flights renewed the raid on the Comen (Carso) military works, with very effective results. All the aeroplanes returned safely to their bases."

Rome, August 19th.

"Flights of aeroplanes and airships are bombarding troops massed behind the enemy's lines."

Rome, August 20th.

"Altogether 208 aeroplanes indefatigably participated in the battle (on the Julian Alps front), attacking repeatedly with bombs and machine guns the troops assembled to the rear of the enemy positions."

Russian.

Petrograd, July 31st.

"To the south of Riga our artillery brought down a German aeroplane. The aviators were killed, and the machine destroyed. A squadron of German aeroplanes dropped bombs on St. Vileika, Stolby and Zamirje."

Petrograd, August 2nd.

"On July 31st a number of enemy machines appeared seven times at various points along the coast and the islands of the Gulf of Riga. At Mentoi and Arensburg they dropped 20 bombs without results. The enemy machines flew as far as Kujvast, where they were met by artillery fire."

"An enemy Zeppelin flew over Tserel."

"A squadron of our aeroplanes, consisting of 24 machines under the command of Lieut.-Colonel Konovaloff, made a flight over St. Voigiany (on the Lida-Molodetchno railway). Over 60 bombs were dropped."

Petrograd, August 7th.

"Our aeroplanes dropped bombs on the railway station of Baranovitchi. Successful hits were observed."

"On August 4th and 5th enemy aeroplanes made a series of flights on the coast and islands of the Gulf of Riga. Recently there has been noticed an increase of scouting and activity in the Gulf of Riga."

Petrograd, August 10th.

"In the direction of Baranovitchi our artillery brought down a German aeroplane, which fell in the region of the village of Wysadovitchi. The machine was burned and its occupants were killed."

Petrograd, August 11th.

"Enemy aeroplanes dropped bombs on the railway station of Bolodetchno."

Petrograd, August 14th.

"German aeroplanes dropped bombs on the railway stations at Molodetchno and Siniavka."

German.

Berlin, August 7th.

"Our air squadrons on the Kurland coast attacked last week the military factories at the mouth of the Dvina and the island of Desel. Good results were secured, and all our aeroplanes returned undamaged."

Berlin, August 11th.

"Nineteen enemy aeroplanes and two captive balloons were shot down, mostly in aerial engagements, which, particularly in Flanders, were very numerous. Vice-Sergeant Muller achieved his 20th and 21st victories."

Berlin, August 12th.

"1st Lieut. Ritter von Tutschek brought down his 22nd and 23rd opponents in aerial battle."

Berlin, August 14th.

"In numerous aerial battles nine enemy aeroplanes and two fixed balloons were shot down."

Berlin, August 15th.

"By their acuteness and ability the battles echelons of our aviators have developed themselves into a valuable arm (weapon) of attack against trench and battery objectives. In aerial battles, which were specially numerous in Flanders, and as a result of anti-aircraft fire, 20 enemy machines and captive balloons were shot down yesterday."

Berlin, August 17th.

"Sixteen enemy aeroplanes were shot down. Baron von Richthofen has thereby gained his fifty-eighth and Senior Lieutenant Dostler his twenty-fifth aerial victory."

Berlin, August 18th.

"By means of our aviators and anti-aircraft fire 26 enemy aeroplanes were brought down, and also four captive balloons, the latter in flames. Senior Lieutenant Dostler gained his twenty-sixth, Acting Officer (Vice-Sergt.-Major) Mueller his twenty-second, and Lieut. Gontermann, by the shooting down of two of the captive balloons, his twenty-ninth and thirtieth aerial victory."

Berlin, August 19th.

"French airmen attacked our captive balloons without success. Baden detachments in Caurières Wood again inflicted losses on the French by a bold coup-de-main, and returned with numerous prisoners."

"Yesterday 19 aeroplanes and one captive balloon were shot down in aerial encounters. Chasing Echelon 11, for a long time conducted by Capt. Richthofen, yesterday, after seven months of activity, brought down its two hundredth adversary; 121 machines and 196 machine guns have been captured by this echelon."

Personals

Casualties.

Captain CECIL DOUGLAS BAKER, Grenadier Guards, who was killed on July 29th, was the third son of the late Arthur Henry Baker, J.P., of Elderslie, Beckenham, Kent, and of Mrs. Baker, of 68, Prince's Gate, S.W. Born in 1870, he was educated at The Abbey School, Beckenham, at Sherborne and Merton College, Oxford, taking his degree in 1893. A fine all-round athlete, he played in the Abbey School XI, and in both the XI and XV at Sherborne. Proceeding to Oxford, he played in the University XV in 1891, 1892 and 1893, being captain in 1892. On leaving Oxford he entered into City life and became a member of the London Stock Exchange in 1895. He married Gwendoline, daughter of the late Alexander Peyman. On the outbreak of war he was given a commission in the R.N.V.R. Anti-Aircraft Corps, but was transferred to the Grenadier Guards in September, 1915. He was wounded in 1916, and was promoted Acting Captain last February.

HUBERT VICTOR BENNETTO, R.F.C., whose death in action was announced last week, was the only son of Mr. A. E. Bennetto, manager of the Lewisham branch of the London City and Midland Bank. He was 27 years of age.

Lieutenant HARRY DUDLEY BLACKBURN, Royal Berkshire Regiment, attached R.F.C., previously reported missing on April 5th, and now reported shot in the air on that date, was the son of the late Henry Bingham Blackburn and Mrs. Henry Bingham Blackburn, of Danhurst, Easbourne. He was educated at St. Augustine's and Hill Brow, Eastbourne, and at Wellington College. On the outbreak of war he joined the Artists' Rifles, and served with them at home and in France for over ten months, when he accepted a commission in the Royal Berkshire Regiment, with which he saw a good deal of fighting till he was invalided home. He then joined the R.F.C. and went to France again with his squadron as an observer on January 13th. There he obtained his wings a few weeks before he was killed.

Second Lieutenant T. F. P. T. DENNETT, Queen's (Royal West Surrey Regiment), attached R.F.C., who died on August 4th of wounds received on the same day, was the only son of Mr. and Mrs. Frank Dennett, of Croydon, and Pett, Hastings, and was aged 22. He was educated at the Whitgift Grammar School, Croydon, and was a medical student at Guy's Hospital. On the outbreak of the war he enlisted as a trooper in the Yeomanry, and went out with the 29th Division to Egypt and the Dardanelles, proceeding to France in March, 1916, where he served until the following August. After training at Cambridge he was gazetted to a commission on December 19th, and was on active service from January to April with his regiment. He was then attached to the R.F.C. after a short training at Brooklands, and met his death while engaged on a reconnaissance as an observer over the enemy lines.

Second Lieutenant HENRY MONTGOMERY SCOTT PILLOW, R.F.C., was killed on August 8th. He was born in March, 1895, and was the second son of Mrs. Pillow, Chief Examiner of the Government Colleges for training teachers in cookery and domestic science and vice-chairman of the Public Service Board, and of the late Edward Pillow, for many years Education Secretary to the Norfolk County Council. He was educated at Norwich Grammar School, and was a student at Guy's Hospital. Within a month of the outbreak of war he joined the Public Schools Brigade, and shortly afterwards went on active service abroad as a private in the Royal Fusiliers. After seven months of service in the trenches he was sent home to train for a commission, and in due course he was gazetted to the Middlesex Regiment, and later transferred to the R.F.C. After gaining the full qualifications, he went to the Front on July 28th, and met his death within ten days. His elder brother, now the only surviving child of Mrs. Pillow, is also an officer, and is serving abroad.

Lieutenant HUBERT PELHAM SWORDER, the Queen's (Royal West Surrey Regiment), attached R.F.C., reported missing on April 2nd, and now reported killed on that date, was the younger son of Mr. and Mrs. John W. Sworder, of Barkway, Herts. He was educated at Haileybury, where he was captain of the gymnasium six, and Sandhurst, where he became U.O., though the youngest of his company. He was a keen follower of fox and otter hounds, and hunted with the Puckeridge Foxhounds and Eastern Counties Otter Hounds. He was made Temporary Captain before he was 19 owing to his being Brigade Signalling Officer, but relinquished this rank on joining the R.F.C. in August, 1916. He was only 19 when he was killed.

Lieutenant MAX ARTHUR EUGENE CREMETTI, Royal Scots Fusiliers, attached R.F.C., whose death has taken place by accident at Hendon, was one of the pilots who, during the big aeroplane raid on July 7th on London, so fearlessly attacked the raiding squadron. He was 24 years of age, was educated at Harrow, and upon leaving school entered the Clement Talbot works, remaining there until the outbreak of war. When the call for despatch riders came he immediately enlisted and went to France with our original Expeditionary Force. He did very good work during the retreat from Mons, and even better at the battle of the Marne, where he received the D.C.M. for "conspicuous gallantry and devotion to duty." He was also mentioned in despatches for distinguished work at Wytschaete, and came home a few weeks later to a commission in the Royal Scots Fusiliers. Wounds received at Wytschaete prevented him being of use to the infantry, and after serving some time he transferred to the R.F.C., returning to France as a qualified pilot. In France he was shot down by an air raider at a height of 8,000 ft., but managed to save his own life and that of his observer's by throwing out the Lewis gun and landing in No Man's Land. Both officers were badly shaken as the result of the affair, and Lieut. Cremetti, after being in hospital for some time, was detailed for duty at an aeroplane receiving station, where he had to test new machines. It was while stationed here that the young officer, not fully recovered from his injuries, went up on Saturday morning, July 7th, to give battle to the raiding Huns. During this raid he twice flew through the raiders, past the guarding battleplanes and back again, his Lewis gun firing all the time. Cremetti followed up the raiders on their return journey to the sea and, catching one over the Thames Estuary, shot him down.

Major JAMES VALENTINE, R.F.C., is reported as having died after an operation at Kieff, in Russia, where he had been specially employed for some time on Government work, holding the rank of Lieutenant-Colonel. He had just received the D.S.O. He was the only child of the late James Valentine, managing director of the Northern Assurance Co., Moorgate Street, who married Miss Fanny Roe, a member of an old Norwich family. Shortly after the outbreak of the war Major Valentine was placed in charge of the British aviation depot in Paris, and received from the French Government the Cross of the Legion of Honour. On returning from France he was sent on a special mission to Italy and subsequently to Russia. The Russian Government presented him with the Order of St. Stanislaus, and in the last list of birthday honours the King conferred on him the D.S.O. Major Valentine married a niece of the present Lord Lonsdale. After her husband was sent to Russia Mrs. Valentine resided in Paris, where she has been doing good service in the military hospitals.

Major Valentine will be best remembered as one of the British pioneers—his R. Ae. C. certificate was No. 47—and his work is set forth in the pages of "FLIGHT," making it unnecessary to recapitulate it at length here. It will be recalled, however, that he was one of the four which finished in the Circuit of Britain of 1911, and also was the only British competitor to complete the whole course of the European circuit.

Married and to be Married.

An engagement is announced between Lieutenant JAMES VINCENT BARRY, R.F.C., second son of the late James Hewitt Barry, of Calcutta and London, and the late Mrs. Barry, of Hillbrow, Horsham, and Lois VERA, only daughter of the late Harold Jones, M.I.C.E., and Mrs. Harold Jones, of 8A, Longridge Road, Earl's Court.

An engagement is announced between Major P. E. L. GETHIN, R.F.C., youngest son of Sir Richard Gethin, Bt., and Lady Gethin, of The Grove, Hythe, Southampton, and NORAH, elder daughter of Mr. and Mrs. I. N. STAPLEDON, of Knapp, East Anstey, Devon.

The engagement is announced of Captain C. C. HAYNES, Devonshire Regiment, R.F.C., eldest son of Colonel C. E. Haynes, C.B., R.E., and Mrs. Haynes, Kerries, South Brent, South Devon, and SHEELAH, youngest daughter of the late Lieutenant-Colonel G. LEMON WALKER, I.M.S., and of Mrs. WALKER, St. Heliers, Jersey, C.I.

A marriage has been arranged, and will take place in November (leave permitting), between the Hon. WINIFRED SMITH, daughter of Lord and Lady Colwyn, of Colwyn Bay, and Captain T. R. IRONS, R.F.C., son of Mr. and Mrs. T. Irons, of Sydney, Australia.

A LAMENT FOR THE BOX KITE.

By CLARENCE WINCHESTER.

IN putting forward a plea for an antiquated mode of aerial travel I have no doubt that, after publication, my postbag will be immediately threatened with shoals of criticisms from the modern school of flight. The Bristol, the Sopwith, and any other form of tabloid, are as the breath of life to the up-to-date sub-lieutenant whose association with aviation commenced with the period of the war. Maybe he learned the initial stages of his art on some decrepit box kite, but he took his lessons within full view of the more advanced craft, and these set up an example which put his own struggling efforts very much in the shade. Consequently, he was fired with an ambition to emulate his superiors who were fortunate enough to be able to disport themselves on real aeroplanes and gracefully draw invisible loops, curves and other artistic forms on various levels in the most erratic of elements—air.

He yearned for the smart and business-like scout, whereon he might one day hope to strafe a rival Hun at ten or fifteen thousand. His soul was of the militarist class, his craft was to be nothing more than a long-range gun, his business merely to be part of the necessary destructive mechanism which seems to be part and parcel of modern civilisation. He wanted a 'bus that would "fly itself," as the term goes. In fact, he found the flying of an ordinary common box kite, with her 50 Gnome, too much like hard work.

But to those of us who knew the box kite in the early days, in fact, to those of us who practically grew up with the box kite, there is a link of sympathy which binds us to that far-off relic, a link composed of pleasant memories and sad regrets. We knew the box kite as the only means of aerial joy. We knew

it as a kindly, but erratic, creature. Often it let us down badly, but just as often we let it down badly in return. The "letting down" appeared to be a mutual agreement, and if the front elevator did take a fancy for a piece of haystack or the back of a shed we were almost loathe to discourage its epicurean desires!

Nowadays, we do not wait for the wind to drop, so we have no leisure to lie upon the grass and read poetry and the aviation Press. We have to take our books with us. We no longer wait anxiously for the lulls. Our sheds and the air are full of life, and our one time artistic sport has descended to the material plane of trade. I have no doubt it gratifies the mercenary spirit, but, even so, the fascination of the "old" days cannot be refuted. Clattering round Shoreham, Brooklands or Hendon at about two or three hundred feet in a Farman, tattered and torn, was an ideal joy. Machines did not "fly themselves" in those days, and "joy stick" wangling was no light matter to the weak of wrist.

Our passengers hung round our necks, or sometimes we would pack three up into a two-seater. In such manner would we travel out across country for a few miles, slowly and not always surely at a height which was precarious for body and soul. The modern aviator does not know the real joy of flight. His craft is but an aerial limousine, and, apart from war, has no risks attached to it. The antique has an attraction for me, and even in aviation I feel its magnetism. But even among those who admire the modern fashion in flight few can justly deny, if they were aeronautically inclined in the days of which I write, the glorious and sporting "atmosphere" attached to the aerodrome of "ye olden times."



FATAL ACCIDENTS.

LIEUT. W. E. TATE and Lieut. G. T. R. Pettigrew, both attached to the R.F.C., were killed in an aeroplane accident in North Wales on Aug. 12th.

While manœuvring over the Hounslow district on Aug. 13th an aeroplane, in performing a spinning nose-dive, fell to earth. The pilot, Lieut. Crewe, R.F.C., was killed.

2nd Lieut. R. Phillips was killed while flying over Lincolnshire on Aug. 14th.

Lieut. Rowlands, R.F.C., after an early morning flight in Lincolnshire on Aug. 15th, collided with a house while landing, and was killed instantaneously, his head being crushed by falling brickwork.

It was announced on Aug. 16th that 2nd Lieut. A. F. McCullough, R.F.C., had been killed by the fall of his machine.

While flying over the Thames at Purfleet on Aug. 17th two Army machines collided and fell near the training ship "Cornwall." Lieut. Doyle, R.F.C., one of the pilots, was drowned, but the other, Lieut. Tinnes, was rescued.

Lieut. M. A. E. Cremitti, R. Scots Fus., attd. R.F.C., was killed at Hendon on Aug. 14th. From the evidence at the inquest, it appears that half an hour before the accident Lieut. Perrin flew the machine and reported that the engine was out of order, as it would not give the necessary number of revolutions. The machine was then marked for the attention of the mechanics. Lieut. Cremitti, however, said that he did not believe it was out of order, and went up in it. The machine went fairly well at the start, but when about 600 ft. up it dropped about 100 ft. It recovered somewhat, but afterwards took a side-turn and, falling to the earth, took fire. The Lieutenant was killed immediately, his body being burned almost beyond recognition. The observer, Corpl. Bingham, was badly injured. A verdict of "Death from Misadventure" was returned.

A collision between two machines from neighbouring aerodromes in the Eastern Midlands on August 20th resulted in the death of the pilot, Lieut. Plughole, of one and the passenger, Air-Mechanic Edwards, of the other.

The same day an accident occurred in Surrey, where a biplane from Brooklands Aerodrome, following an explosion at an altitude of 4,000 ft., caught fire and crashed to earth. Lieut. H. S. Jordan, R.F.A., attd. R.F.C., acting as observer, and Sergeant E. Handley, R.F.A., were killed instantaneously.

A Warwickshire coroner held an inquest on August 20th on the body of First Air-Mechanic S. E. Larkin, which followed a flying accident near Birmingham. The pilot, Lieut. Belcher, was flying with Larkin, and when about 500 ft. high they encountered a "bump" in a gust of wind. The machine nose-dived and crashed to earth. Lieut. Belcher, who is still in hospital, was seriously injured. He has stated that if they had been higher they could have escaped the accident. A verdict of "Accidental Death" was returned.

At an inquest held at Hendon on Aug. 21st on 2nd-Lieut. G. H. Munro, R.F.C., who was killed at Hendon aerodrome, it was stated that he was taking a machine from Farnborough to Yorkshire. Owing to approaching darkness he tried to land at Hendon, but apparently misjudged the distance in landing. His machine lost flying speed and nose-dived, crashing to the ground. A verdict of "Death from Misadventure" was returned.

Two Well-Known Pilots Killed.

WHILE testing a new machine, Capt. Roukel, one of the best-known French pilots, has been killed.

M. François Lafourcade, the French champion cyclist, has been killed while carrying out his duties of patrolling the coast as a non-commissioned flying officer. His machine capsized and the bombs he was carrying burst. His observer was also killed.

THE WHITEHEAD AIRCRAFT SPORTS MEETING.

At Hanworth Park on Saturday, August 18th, was held the second annual sports of the Whitehead Aircraft Co., on a day so perfect as regards the weather as to be a repetition of the

inscribed as is usual with such gifts, and bore the motto, "Fortune Helps the Bold." Mrs. Whitehead was at the same time presented with a bouquet of carnations, and both



Mr. Whitehead and two of his staff watching the Whitehead-Sopwith tug-of-war.

previous year's meeting. It is somewhat difficult with such a large open space as Hanworth Park in which to stroll to



Mr. J. Ward, manager, on the right, discusses sport points with Messrs. Oylar and Baker, two of the staff stewards.

Getting her back—and heel—into it. A pull and a smile shortens many a mile.



Heavy responsibilities. One who had to be reckoned with in the ladies' tug-of-war.

estimate the number of persons present, but it may safely be reckoned at not less than between 3,000 and 4,000, whilst some 2,000 more or less sat down to lunch and tea in the huge Western Erecting Shop. To say that Mr. Whitehead entertained his guests with his usual lavishness is but to emphasise what everybody would expect, and to define the completeness of the arrangements and the forethought that had preceded the afternoon's entertainment.

No speeches were made at the luncheon beyond a few words of thanks and appreciation by Mr. Whitehead upon receiving a presentation gold watch, the gift of his employees to their "Honoured Chief." The watch was

"Many a slip." J. Corbett, winning the 220 yards handicap. F. A. Bass, who ran second, is seen falling at the post.



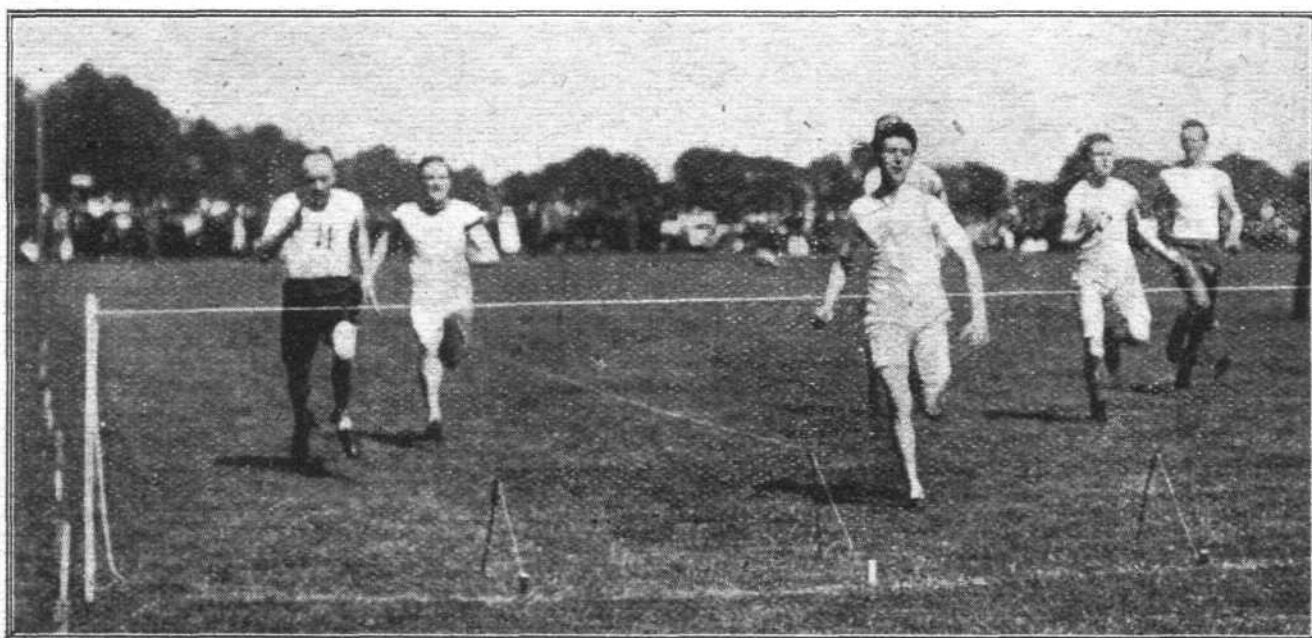
After lunch a group—in the form of a semi-circle of some 3,000 employees, with their chief and Mrs. Whitehead as a central embellishment—was formed in the grounds, the while a panoramic camera swept its discerning eye through the whole arc of 180°.

Shortly before 2 o'clock there commenced the first of the 23 events and finals that went to the afternoon's sport, and which proceeded with a clocklike regularity until well into the evening.

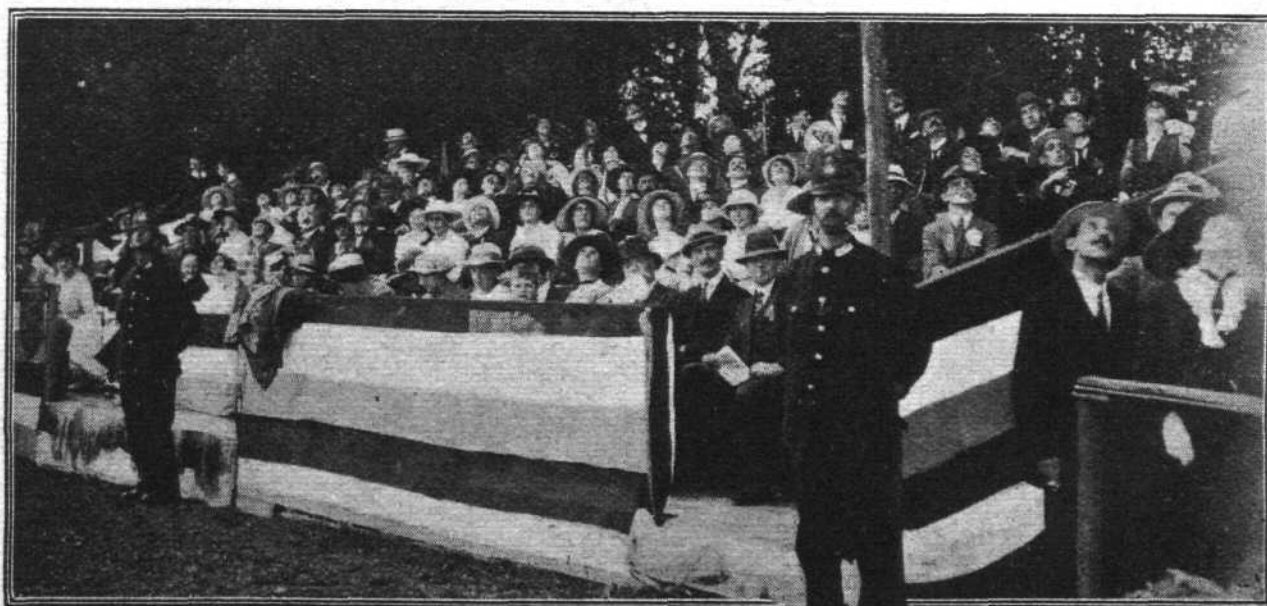
Midway in the procession of events Capt. Payse, on a Sopwith "Pup," gave a splendid exhibition of looping and other aerial acrobatics that were eagerly watched by all assembled and greatly admired. Inter-factory friendly



THE WHITEHEAD AIRCRAFT SPORTS.—The pivot of a huge enterprise. Mr. and Mrs. Whitehead as the central figures in a group of some 3,000 employees arranged in the form of an arc. Supporting their chief are Mr. J. Ward, manager, and other members of the staff.



THE WHITEHEAD AIRCRAFT SPORTS.—The finish of the 100 yards flat.



THE WHITEHEAD AIRCRAFT SPORTS.—Where "flight" be a boon. Occupants of the chief stand watching

collars with a cutout back would Captain Payse loop-the-loop.

rivalry was introduced in the tug-of-war between picked teams of Whitehead's and Sopwith's. The latter team put in an appearance somewhat late, but were with sportsmanlike good feeling waited for by their rivals. They arrived to win, and surely to complete a team exhibiting such an immense amount of flesh and muscle even such a large factory as Sopwith's must have been winnowed clean. Whitehead's men put every ounce of which they were possessed into the struggle, but avoirdupois told, and the Hanworth men were slowly but surely drawn to that point where the judge raises his right hand as a sign that all is over.

A concert by the Whitehead Aerodrome Musical Society,

held in the big erecting shop, brought to a close a very interesting and enjoyable day.

The results of some of the principal events are returned as under:—100 Yards Flat: Northover, 1; C. Doubtfire, 2. 220 Yards Handicap: J. Corbett, 1; F. A. Bass, 2. 440 Yards Handicap: Northover (14 yards), 1; C. Doubtfire (scratch), 2. Tug-of-war, Whitehead's v. Sopwith's: Sopwith's won. Mile Relay Race: Erectors, Hanworth, 1; Fitters, 2. Cigarette Race: E. Tugwell and M. Williams, 1; C. Baker and C. Gale, 2. Veterans' 100 Yards Handicap: W. Taylor, 1; Small, 2. Marathon Race: J. W. Martin, 1; B. May, 2.

LEGAL INTELLIGENCE.

Admiralty Contracts for Aircraft.

AT Bow Street Police Court on August 17th, before Sir John Dickinson, the hearing was resumed of the case in which W. A. Casson and Wing-Commander J. C. Porte, R.N.A.S., are charged with having conspired together and with Lyman J. Seeley and other persons to contravene the Prevention of Corruption Act, 1906, in respect of sums amounting to about £48,000 received by Porte, an agent of the Crown, in respect of contracts made between the Lords Commissioners of the Admiralty and the Curtiss Aeroplane Co. of New York. Commander Porte was again absent through illness.

After evidence as to various contracts with the Curtiss Co. had been given by Mr. Arthur Smallwood, Assistant Director of Contracts at the Admiralty, the Attorney-General said he proposed to put in as evidence the exhibits of the statements made by the defendants before the committee of enquiry appointed by the then First Lord of the Admiralty (Sir E. Carson), and presided over by Mr. Butcher, K.C.

Mr. Muir, representing Commander Porte, submitted that there was no proof that the statement made by Commander Porte to the Committee was a voluntary one, and that in the absence of such evidence it was not admissible in law. So far from Commander Porte's statement having been a voluntary one, he had been practically under compulsion as a naval officer to attend the enquiry, and he was subjected to examination as a hostile witness—in other words, as a person to whom suspicion attached.

Mr. Patrick Hastings, who represented Casson, put forward similar arguments.

In replying for the Crown, Sir A. Bodkin said that Casson, who was himself a barrister, had never raised any objection to giving information to the Committee and had not declined to answer the Committee's questions, so that he was to all intents and purposes a voluntary witness.

Sir John Dickinson said he had come clearly to the conclusion that the statements made by the defendants to the Committee could be legally received as evidence, and he therefore admitted them.

Further evidence was given by Mr. E. T. Stainforth, a member of the Stock Exchange, and Mr. E. More, manager of a stock-broking firm, as to investments made in the names of Porte and Casson in 1915-16-17.

At the resumed hearing on the following day, Sir Francis Hopwood, until recently Civil Lord of the Admiralty, gave evidence. He said Lieut. Nielson's statement after his return from the United States was the first he had heard of commissions in connection with these contracts. Up to then he had not heard of Lyman J. Seeley, but later Seeley called to see him and discussed the subject. Witness understood from Seeley that under certain arrangements made at an earlier period between Seeley and Curtiss, the former received a small salary plus 1 per cent.; but when, in consequence of the outbreak of war, increased business appeared to be imminent, certain further arrangements were made under which the commission was increased to 16 per cent.

Sir A. Bodkin: Did he say on what that commission was payable?—Yes. Putting it generally, he said it was on sales of the company's products—certainly in Great Britain, and, I rather think, in Europe, with the exception of Russia.

Did he say whether the commission was on sales generally or only on sales effected through his agency?—He was, according to his account, sales agent, and the commission was payable to him as such. I put it to him that he must have received a very considerable sum of money in commission, and to that he assented. I said something to the

effect that it must have run into six figures. He remarked that he had not drawn by any means all of it, but was leaving it deposited in the United States.

Did you ask him what had been done with any of the money so remitted?—I asked him whether he had retained the remitted money for his own use or whether he had parted with any of it to other people, particularly servants of the Crown. He replied, "Most certainly not," and said he regarded it as his own under his sales agreement.

Did he mention any arrangement that had been made between himself and Casson?—He said he had come to the conclusion that it was exceedingly likely that Mr. Curtiss had entered into what he called a secondary agreement with Casson, and that on that account he (Seeley) had felt it desirable in his own interests to come to an arrangement with Casson for the division of his extra 15 per cent.

On October 30th, 1916, Casson, in company with Seeley, called on witness, and recited the arrangement with Seeley as to the division of the 15 per cent. commission in equal shares, and gave witness to understand that he received his share through Seeley, by virtue of an agreement between the Curtiss Co. and Seeley. Witness suggested to Seeley that the total commission must have amounted to over £100,000, and asked him if he had parted with any of his share of the money to any servant of the Crown, particularly Commander Porte, and he replied in the negative, saying most distinctly that no one but himself had any rights in the 7½ per cent. Seeley was present throughout the interview, and did not dissent from anything Casson said, nor, on the other hand, did Casson dissent from anything Seeley said. Seeley tried to make a point of the commission being only 15 per cent. whereas in the trade the usual commission under sales agreements was 25 per cent. Seeley also said that Capt. Elder, who represented the Admiralty in America, knew that the commissions were being paid. In connection with the fact that when the Admiralty settled their new contract with the Curtiss Co. a clause was inserted prohibiting the payment of any commissions, both Casson and Seeley appealed to witness to waive that prohibitive clause, and he was obliged to decline absolutely to do so.

Mr. Muir intimated that Commander Porte was so far improved in health that he hoped to be able to be present next week, as he was most anxious to be, to hear read over the evidence which had been given in his absence.

Sir A. Bodkin suggested that that course would be unnecessary, and that it might be obviated by Commander Porte being supplied with a copy of the depositions.

Sir John Dickinson agreed, and Mr. Muir accepted the proposal on the distinct understanding that his client should not be in any way prejudiced by the circumstance that he had been prevented by illness from attending to hear the evidence in person.

Several witnesses were briefly examined as to the banking accounts of Seeley, Casson and Porte at various banks, and Sir A. Bodkin said that closed the case for the prosecution.

Sir John Dickinson said Casson would be committed to take his trial at the Central Criminal Court, the same bail as before being accepted for his appearance. Mr. Hastings said he would reserve his defence.

A legal discussion ensued as to the course to be adopted in regard to Porte, owing to his enforced absence, Mr. Muir contending that he must either be committed for trial or have the summons against him dismissed, but eventually it was decided that the summons against him should stand adjourned *sine die*, the question whether he should be proceeded against under the Vexatious Indictments Act being left open.

"A German aeroplane attacked a French 'sausage,' whose observer leaped out; but the parachute caught the edge of the basket, leaving him suspended hundreds of feet above the earth, where a German aviator machine-gunned him. His comrades, however, hauled down the 'sausage,' and released him unharmed."

A Parachute Episode.

AN incident recorded by Mr. Henry Wood, the United Press correspondent with the French Armies at Verdun, emphasises the need for the use of the best design of parachutes for escaping from kite-balloons. He says:—

THE COWPER-COLES AIRCRAFT COMPANY.

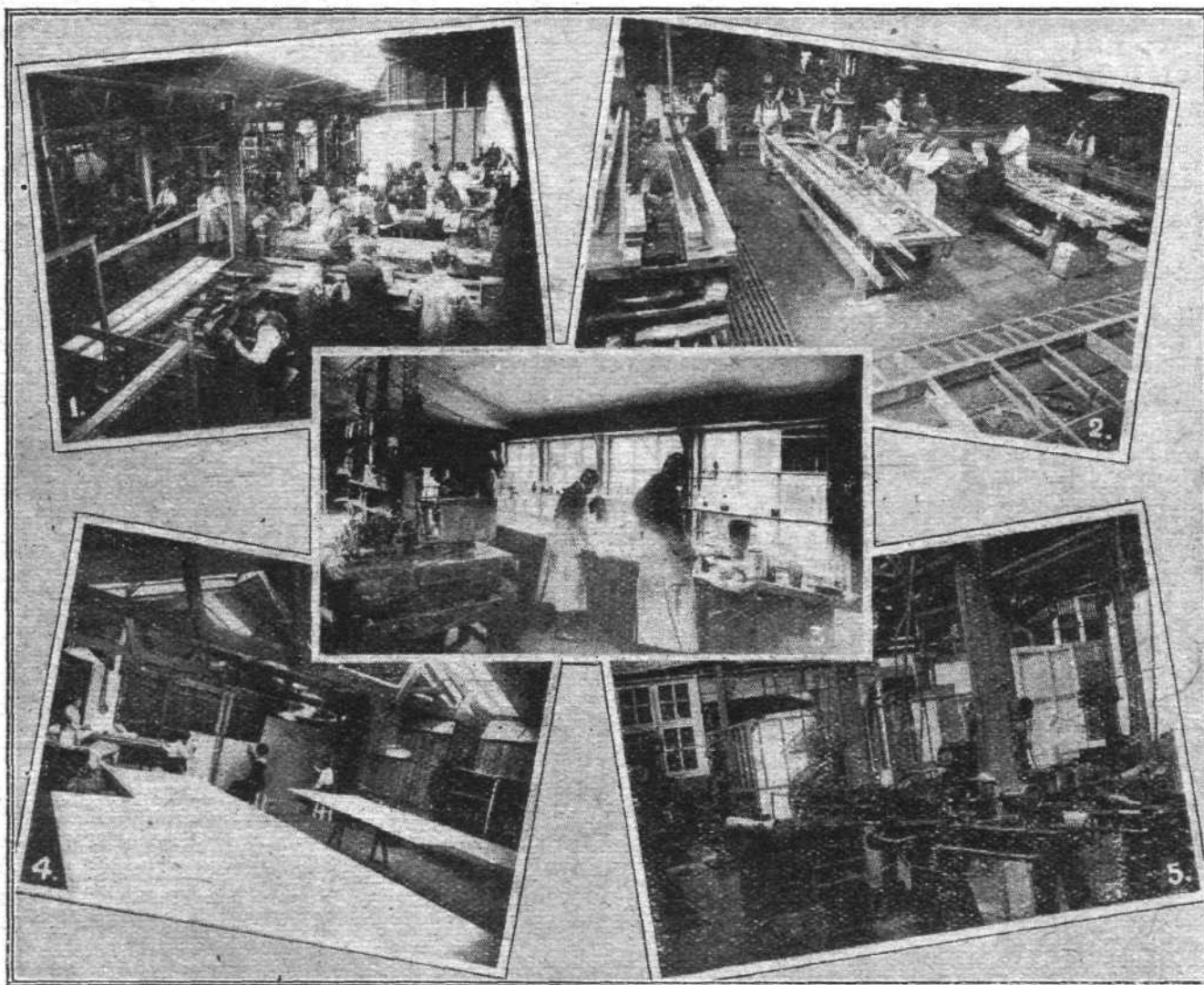
THERE is a branch of the aeroplane industry in process of establishment at the little riverside village of Sunbury-on-Thames that may well cause that abode of *Dolce far niente* to wake up and metaphorically rub its eyes.

Somehow the haste and bustle and noise of an up-to-date factory engaged in the production of our latest engines of war, and one of the most restful spots on our brave old river seem as far apart as the poles. One can hardly believe or credit the idea of circular saws screaming their way through plank and beam midst the sylvan woods round and about; of barges laden with timber and steel nosing their way through the placid waters. Bargees and the noble exponents of Sir Isaac will no doubt bandy expletives, punters in immaculate flannels and tug skippers in greasy overalls will doubtless exchange diatribe, but we are at war, and war means progress,

covering, and this appears to be no dream-picture, but a proposition within measurable distance of becoming an accomplished fact.

"Sherardising," the invention of Mr. Cowper-Coles, is one of the processes now in operation, and one that should be of great value in seaplane construction work. It is a method of making metal rustproof by a new process in which zinc dust is employed in place of the usual method of galvanising. In this way the zinc instead of simply coating the article becomes incorporated in the skin to a considerable depth. So much so is this the case that whereas in the old process there is a tendency to the choking up of fine threads and small depressions, such articles as screws with finely cut threads now retain all their original keenness.

Another of the inventions of this scientist in a similar



Some views of the Cowper-Coles Aircraft Company's temporary workshops at Sunbury.—1. The fitter's shop. 2. The wing building shop. 3. One of the laboratories. 4. A stitching room. 5. The machine shop.

so the hand of necessity has reached out and gathered in Sunbury.

Mr. Sherard Cowper-Coles, the well-known scientist, engineer, metallurgist, and author, son of the famous Captain Cowper-Coles, C.B., R.N., who invented the armoured turret for battleships, is head of affairs. For many years Mr. Cowper-Coles has carried on an immense amount of experimental and research work at his laboratories at Sunbury, and it was his researches into metallurgy and the knowledge gained thereby that suggested to him how great a help he could be and to what great purpose his knowledge could be put in the interests of aviation. Let it be said that that help has been put to immediate good in the most useful channels in that his works are now engaged on aeroplane parts of the orthodox description.

But the purpose of the Cowper-Coles Aircraft Co. is an aeroplane composed entirely of metal, even to the wing

direction is a method by which copper water jackets to cylinders are deposited in large numbers with a depositing time of only one hour. Radiator tubes of extraordinary lightness are produced in the same way, without weld or seam.

With such a man as the guide expansion must follow naturally and be reckoned with. Thus the present workshops having proved all too small a large estate of over 30 acres encompassing a house containing about 40 rooms has been acquired, together with a river frontage of some 370 ft. to a backwater of the Thames. Here will be erected seaplane shops and wharfage, together with landing stages and warehousing accommodation.

The works are quickly getting towards full swing, meanwhile it being interesting to speculate on the all-metal plane that will some day emanate from this colony of workers so comfortably settled in a Thames beauty-spot.

THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS.



The second Annual General Meeting of the Society will be held at the Lounge Room, Caxton Hall, Westminster, S.W., on Wednesday, August 29th, 1917, at 4 p.m. The Annual Report and Accounts for 1916 have been sent out to members.

A Council Meeting of the Society will be held immediately following the General Meeting.

SIDE-WINDS.

In these days of factory extension, the fitting of new or enlarged offices, or any of the numerous structural activities contingent on extended businesses, decoration of the interior has to be provided for. Messrs. Naylor Brothers of Southall are now issuing a little booklet that is free for the asking and should prove a great help in deciding just what to do in this matter. Herein are hints and suggestions for the director's office, the showrooms, the entrance hall, and the workshops. Alternative colours and schemes are also put forward, and altogether a handy little book is the result. "The Finish of the Factory" will prove of real help in deciding where indecision so often holds sway.

MESSRS. THOMPSON BROTHERS (BILSTON), LTD., are now installed in their new building opposite their old works, which gives them ample room for the manufacture of metal components for aircraft, work on which they have now been engaged for a couple of years. Well lit and ventilated the new shop is 130 ft. long and 50 ft. wide in one span. It is equipped with electric drives for the machine tools, comprising modern lathes, capstans, millers, saws, grinders, drills, power presses, &c. It is also provided with a large oxy-acetylene welding plant, and there is also a small woodworking and doping section. It is not possible to give details of the work carried out, but among the productions may be mentioned undercarriages, tubular framework, engine plates, levers, &c., and welding of aluminium and steel, &c. Extensions in the shape of stove enamelling and dope shops are also being laid down.

CLIENTS of Messrs. Haigh's (Oldham), Ltd., should note that their works will be closed from Friday evening, August 24th, to Monday morning, September 3rd, during which period goods cannot be received or despatched. Only correspondence of an urgent nature will be attended to.

WITH a card containing 18 events, half of which were confined to works' employees, the second annual charity sports of the Sunbeam Motor Car Co., Ltd., on August 18th at Molineux Grounds, Wolverhampton, proved a great success. A full list of entries was secured, one event having no less than 87, and in the open events some of the best runners and cyclists in the Midlands competed. Among those present were Mr. Alfred Bird, M.P., and many others prominently identified with Sunbeams. In distributing the generous array of prizes, Mr. Clement B. Kay, the popular works manager, said that in his 28 years of experience he had never known a more generous body of workers than those of Sunbeams. Before the war nothing was known publicly of their good deeds in this connection; while during it they had contributed upwards of £3,000 to various hospitals and funds in connection with wounded soldiers. The exact amount realised by the sports would be announced at a later date. In the meantime, they might rest assured that it would run into three figures. Mr. Coatalen's and Mr. Iliff's hearty good wishes had been fulfilled in that they had had a thoroughly successful afternoon. The winners in the various events were:—100 yards girls' flat handicap: 1st, C. Evans. 100 yards flat handicap (employees): 1st, J. Lane. 150 yards scholars' flat handicap: 1st, J. Pearson. ½ mile cycle handicap (employees): 1st, C. Sargent. 3 lap works relay race: 1st, Electric Construction Co. 80 yards girls' three-legged race: 1st, M. Healy and C. Evans. Tug-of-war: 1st, Test House. Wounded soldiers' race: 1st, Corpl. Ferguson. Comical costume parade: 1st, E. Williams. 220 yards works' flat handicap: 1st, W. Hindes. ½ mile flat handicap (employees): 1st, W. Pace. 1 mile walking handicap (employees): 1st, T. Roker. 1 mile flat handicap (employees): 1st, A. Wakeman. 100 yards flat handicap (open): 1st, W. Pearson. ½ mile cycle race (open): 1st, J. Vincent. 1 mile cycle handicap (open): 1st, W. Titley. 220 yards flat handicap (open): 1st, W. Gill. 440 yards hurdle handicap (open): 1st, G. H. Shelton.

The Raid on Venice.

IN the raid on Venice on August 14th one of the bombs fell on the civil hospital which forms part of the famous school of St. Mark and damaged about one-third of the ceiling of the largest hall, causing the death of four patients. Fortunately sufficient of the ceiling is undamaged to enable it to be reconstructed. The raiding squadron was severely handled by the defence, one machine falling on Venice and another in the sea.

The Raid on Freiburg.

A TELEGRAM received in Amsterdam from Essen states that the *Generalanzeiger* publishes the following official announcement from Berlin:—

"An enemy squadron of seven aeroplanes appeared over Freiburg on Friday afternoon between 12.30 and 1 o'clock and dropped several bombs. Four persons were injured and three buildings damaged, but no military damage was done. German battle aeroplanes shot down an enemy machine, which crashed to the ground."

IMPORTS AND EXPORTS, 1916-1917.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; for 1915, see "FLIGHT" for January 13th, 1916; and for 1916, see "FLIGHT" for January 11th, 1917.

	Imports.		Exports.		Re-Exportation.	
	1916.	1917.	1916.	1917.	1916.	1917.
January ...	1,509	10,842	6,399	67,033	Nil.	Nil.
February ...	6,444	9,479	30,693	26,512	—	6
March ...	3,388	11,158	17,872	58,517	7	—
April ...	3,383	21,141	22,608	21,151	3,783	—
May ...	1,986	6,877	26,165	59,713	300	—
June ...	4,986	2,670	50,287	14,647	—	—
July ...	2,072	9,104	12,932	106,250	—	—
	23,768	71,271	166,956	353,823	4,090	6

NEW COMPANY REGISTERED.

SPEED-UP CO., LTD., 23, King's Chambers, 26, Angel Street, Sheffield.—Capital £500, in £1 shares. Manufacturers of and dealers in a chemical compound known as "Speed-up" used for saving and giving higher efficiency to petrol and other combustible spirits or oils; also manufacturers of and dealers in motor cars, airships, &c. First directors: H. Heathcote and W. Lockwood.

Aeronautical Patents Published.

Applied for in 1916.

The numbers in brackets are those under which the Specifications are printed and abridged, &c.

Published August 23rd, 1917.

- 13,285. A. J. REYNOLDS. Searchlight in combination with gun for use against aircraft. (108,232.)
16,792. J. ROONEY. Airships. (108,259.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xl, xli and xlii).

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